HCD-PX5

SERVICE MANUAL

Ver 1.2 2002.11

Self Diagnosis Supported model

E Model
Tourist Model

Photo: Silver model

HCD-PX5 is the Amplifier, CD player, MD Deck and Tuner section in CMT-PX5.

US and foreign patents licensed from Dolby Laboratories.

MD Section	Model Name Using Similar Mechanism	HCD-MD595
	MD Mechanism Type	MDM-7X2A
	Optical Pick-up Name	KMS-262A/J1N
CD Section	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM63-21BD53
	Base Unit Name	BU-21BD53
	Optical Pick-up Name	OP Assy (A-MAX. 2)

SPECIFICATIONS

Amplifier section

Tourist model:

Continuous RMS power output (Reference):
20 + 20 watts (6 ohms at 1 kHz, 10% THD, 240 V)

Other models:

Continuous RMS power output (Reference):
20 + 20 watts (6 ohms at 1 kHz, 10% THD, 220 V)

Inputs
TAPE IN (phono jacks): voltage 250 mV, impedance 47 kilohms
DIGITAL OPTICAL IN (Supported sampling frequencies: 32 kHz, 44.1 kHz and 48 kHz)
ANALOG IN (stereo minijack): voltage 250 mV, impedance 47 kilohms

Outputs
TAPE OUT (phono jacks): voltage 250 mV, impedance 1 kilohm
PHONES (stereo minijack): accepts headphones of 8 ohms or more.
SPEAKER: accepts impedance of 6 to 16 ohms.

CD player section

System	Compact disc and digital audio system
Laser	Semiconductor laser (λ=800 nm) Emission duration: continuous
Laser output	Max. 44.6 µW* * This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with a 7 mm aperture.
Frequency response	2 Hz – 20 kHz

MD deck section

System	MiniDisc digital audio system
Laser	Semiconductor laser (λ=780 nm) Emission duration: continuous
Laser output	Max. 44.6 µW* * This output is the value measured at a distance of 200 mm from the objective lens surface on the Optical Pick-up Block with a 7 mm aperture.
Sampling frequency	44.1 kHz
Frequency response	5 Hz – 20 kHz

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range	
Tourist model:	76.0 – 108.0 MHz (50 kHz step)
Other models:	87.5 – 108.0 MHz (50 kHz step)
Aerial	FM lead aerial
Aerial terminals	75 ohms unbalanced
Intermediate frequency	10.7 MHz

AM tuner section

Tuning range	531 – 1,602 kHz (with the interval set at 9 kHz) 530 – 1,710 kHz (with the interval set at 10 kHz)
Aerial	AM loop aerial External aerial terminals
Intermediate frequency	450 kHz

General

Power requirements	
Tourist model:	110 – 120 V or 220 – 240 V AC, 50/60 Hz Adjustable with voltage selector
Other models:	220 V AC, 50/60 Hz
Power consumption	
Tourist model:	75 watts during normal operation 240 V AC
Other models:	60 watts during normal operation
Dimensions (w/h/d) incl. projecting parts and controls	Approx. 175 × 250 × 370 mm
Mass	Approx. 7.5 kg

Design and specifications are subject to change without notice.

COMPACT DISC DECK RECEIVER

9-929-568-13
2002K0500-1
© 2002.11

Sony Corporation
Home Audio Company
Published by Sony Engineering Corporation

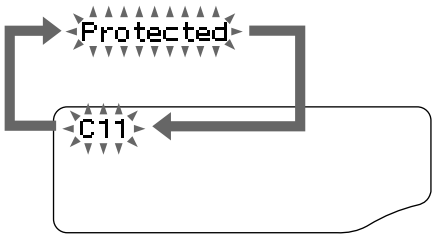
SONY®

SELF-DIAGNOSIS FUNCTION

The self-diagnosis function consists of error codes for customers, which are displayed automatically when errors occur, and error codes, which show the error history in the test mode during servicing. For details on how to view error codes for the customer, refer to the following box in the instruction manual. For details on how to check error codes during servicing, refer to the following "Procedure for using the Self-Diagnosis Function (Error History Display Mode)".

Self-diagnosis Display

This system has a Self-diagnosis display function to let you know if there is a system malfunction. The display shows a code made up of three or five letters and a message alternately to show you the problem. To solve the problem refer to the following list. If any problem persists, consult your nearest Sony dealer.



C11/Protected

The MD is protected against erasure.

➔Remove the MD and slide the tab to close the slot.

C12/Cannot Copy

You tried to record a CD or MD with a format that the system does not support, such as a CD-ROM.

➔Remove the disc and turn off the system once, then turn it on again.

C13/REC Error

Recording could not be performed properly.

➔Move the system to a stable place, and start recording over from the beginning.

The MD is dirty or scratched, or the MD does not meet the standards.

➔Replace the MD and start recording over from the beginning.

C13/Read Error

The MD deck cannot read the disc information properly.

➔Remove the MD once, then insert it again.

C14/Toc Error

The MD deck cannot read the disc information properly.

➔Replace the MD.

➔Erase all the recorded contents of the MD using the All Erase function.

C41/Cannot Copy

The sound source is a copy of a commercially available music software, or you tried to record a CD-R (Recordable CD).

➔The Serial Copy Management System prevents making a digital copy. You cannot record a CD-R.

C71/Check OPT-IN

This appears momentarily because of the signal of the digital broadcast during recording.

➔There is no affect on the recorded contents.

No component is connected to the DIGITAL OPTICAL IN jack, or a digital component is not connected properly.

➔Connect a digital component to the DIGITAL OPTICAL IN jack properly using a digital connecting cable (not supplied).

The connected digital component is not turned on.

➔See the operating instructions supplied with the connected component and confirm whether the component is turned on.

The digital connecting cable connected to the DIGITAL OPTICAL IN jack is pulled out, or the connected digital component is turned off during digital recording.

➔Connect the cable, or turn on the digital component.

E0001/MEMORY NG

There is an error in the internal data that the system needs in order to operate.

➔Consult your nearest Sony dealer.

E0101/LASER NG

There is a problem with the optical pickup.

➔The optical pickup may have failed. Consult your nearest Sony dealer.

MD SECTION

PROCEDURE FOR USING THE SELF-DIAGNOSIS FUNCTION (ERROR HISTORY DISPLAY MODE)

Note: Perform the self-diagnosis function in the "error history display mode" in the MD test mode. The following describes the least required procedure. Be careful not to enter other modes by mistake. If you set other modes accidentally, press the [MENU/NO] button to exit the mode.

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to set the MD function.
3. Press three buttons of [■] , [MD ►II], [⏏] (CD3) simultaneously to enter the MD test mode and display "[Check]".
4. Turn the [ENTER/YES] knob to display "[Service]".
5. Press the [ENTER/YES] button to display "AUTO CHECK" (C01), and turn the [ENTER/YES] knob to display "Err Display" (C02).
6. Press the [ENTER/YES] button to enter the error history mode and display "op rec tm".
7. Select the contents to be displayed or executed using the [ENTER/YES] knob.
8. Press the [CD SYNC NORM SPEED] button to light up "IT" indicator, then press the [REC MODE] button will display or execute the contents selected.
9. Press the [REC MODE] button another time returns to step 7.
10. Press the [MENU/NO] button displays "Err Display" (C02) and release the error history mode.
11. To release the MD test mode, press the [REPEAT] button to display "Initialize" and release the MD test mode.

ITEMS OF ERROR HISTORY MODE ITEMS AND CONTENTS

Display	Details of History
op rec tm	Cumulative recording time is displayed. When cumulative recording time is over 1 minute, the hour and minute are displayed as they are. When it is under 1 minute, “Under 1 min” is displayed. The displayed time is the total time the laser is set to the high power state. This is about 1/4 of the actual recording time. The time is displayed in decimal digits.
op play tm	Cumulative playing time is displayed. When cumulative playing time is over 1 minute, the hour and minute are displayed as they are. When it is under 1 minute, “Under 1 min” is displayed. The displayed time is the total of the actual play time. Pauses are not counted. The time is displayed in decimal digits.
spdl rp tm	Cumulative spindle motor running time is displayed. When cumulative spindle motor run time is over 1 minute, the hour and minute are displayed as they are. When it is under 1 minute, “Under 1 min” is displayed. The time is displayed in decimal digits.
retry err	Displays the total number of retries during recording and number of retry errors during play. Displayed as “r ☐☐ p ☐☐”. “r” indicates the retries during recording while “p” indicates the retry errors during play. The number of retries and retry errors are displayed in hexadecimal digits from 00 to FF.
total err	Displays the total number of errors. Displayed as “total ☐☐”. The number of errors is displayed in hexadecimal digits from 00 to FF.
err history	Displays the 10 latest errors. Displayed as “0☐ ErrCd @@”. ☐ indicates the history number. The smaller the number, the more recent is the error. (00 is the latest) @@ indicates the error code. Refer to the following table for the details. The error history can be switched by turning the ENTER/YES knob.
retry adrs	Display the 5 latest retry address. Display as “☐☐ ADRS@@@@”. ☐☐ indicates the history number. The smaller the number, the more recent is the error. (00 is the latest) @@@@ indicates the cluster of retry address. The number of retry address can be switched by turning the ENTER/YES knob.
er refresh	Mode to clear the error history and retry address history. **Procedure:** 1) Press the REC MODE button. 2) The display will change to “er refresh?”, and then press the ENTER/YES button. The operation is over if “Complete!” is displayed. After this mode was executed, check the following: • The data have been cleared. • Perform the recording and playing to check that the mechanism operates normally.
op change	Mode to clear cumulative time of “op rec tm” and “op play tm”. These historical data are used to determine the timing when the optical pick-up is to be replaced. When the optical pick-up was replaced, perform this operation to clear historical data. **Procedure:** 1) Press the REC MODE button. 2) The display will change to “op change?”, and then press the ENTER/YES button. The operation is over if “Complete!” is displayed.
spdl change	Mode to clear cumulative time of “spdl rp tm”. This historical data is used to determine the timing when the spindle motor is to be replaced. When the spindle motor was replaced, perform this operation to clear historical data. **Procedure:** 1) Press the REC MODE button. 2) The display will change to “spdl change?”, and then press the ENTER/YES button. The operation is over if “Complete!” is displayed.

Table of Error Codes

Error Code	Details of Error
10	Loading failed
12	Loading switch combination is illegal
20	Head of PTOC could not be read within the specified time
21	Head of PTOC could be read but its content is erroneous
22	Access to UTOC could not be made within the specified time
23	UTOC could be not read within the specified time
24	Content of UTOC is erroneous
30	Playing could not start
31	Content of sector is erroneous
40	Cause of retry occurred during normal recording
41	D-RAM overflowed and retry was executed
42	Retry was executed during the writing to TOC
43	S.F editing was interrupted by retry
50	Address could not be read except in access processing
51	Focusing failed and it is out of control
60	Unlock retry

CD SECTION

PROCEDURE FOR USING THE SELF-DIAGNOSIS FUNCTION (ERROR HISTORY DISPLAY MODE)

1. To Enter The CD Test Mode

Procedure:

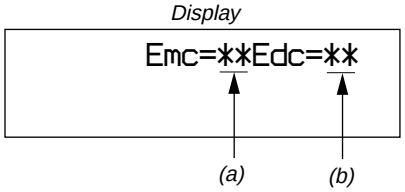
1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to set the CD function.
3. Press three buttons of [■] , [ENTER/YES], and [⏏] (CD2) simultaneously (When releasing the buttons, the [ENTER/YES] button is the last to be released).
4. The set enter the CD test mode (menu) and displays “dvt ERR CODE”.

Note: If the consequence was diaplayed except “dvt ERR CODE”, turn the [ENTER/YES] knob to display “dvt ERR CODE”.

2. Display of Error Number

Procedure:

1. Press the [⏏] (CD1) button to display as bellow.



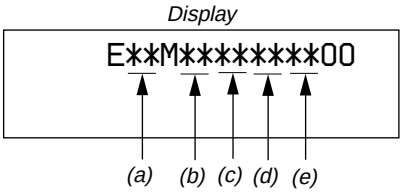
(a) Number of mechanical error.
(b) Number of no disc error that occurred after chucking.

2. Press the [■] button to release the CD test mode.

3. Display of Mechanical Error History

Procedure:

1. In the CD test mode menu, turn the [ENTER/YES] knob to display “dvt ECODE MEC”.
2. Press the [⏏] (CD1) button to display as bellow.



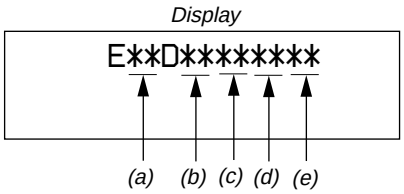
(a) The number of mechanical error.
Latest one “00” to last ten “09”
(Turn the [ENTER/YES] knob to change the error number)
(b) FF: Mechanical error, when normal operation.
Other display: Mechanical error, between mechanical initialize.
(c) 7x: Mechanical error in the midst of select a sub tray.
9x: Mechanical error in the midst of moving a sub tray from the stocker to the main tray.
(d), (e): Not used in servicing.

3. Press the [■] button to release the CD test mode.

4. Display of No Disc Error History

Procedure:

1. In the CD test mode menu, turn the [ENTER/YES] knob to display “dvt ECODE BU”.
2. Press the [⏏] (CD1) button to display as bellow.



(a) The number of no disc error.
Latest one “00” to last ten “09”
(Turn the [ENTER/YES] knob to change the error number)
(b) 01: Focus error
02: GFS error
03: Set up error
04: Focus error (not used in servicing)
(c) 00:No disc error (Did not chucking retry)
02: No disc error (Chucking retry to completion)
(d) The status, when determined no disc error.
2x: During setting up
3x: During reading TOC
4x: During accessing
5x: During playback
6x: During pause
7x: During manual search (during playback)
8x: During manual search (during pause)
(e) Rotation setting of the spindle motor, when determined no disc error.
01: normal speed
02: double speed
04: four times speed

3. Press the [■] button to release the CD test mode.

4. To Erase The Error History

When returning the unit to the customer after completing repairs, perform this to erase the past error history.

Procedure:

1. In the CD test mode menu, turn the [ENTER/YES] knob to display “dvt ECNT0 MEC”. (When erase the mechanical error) Or one more turn the [ENTER/YES] knob to display “dvt ECNT0 BU”. (When erase the no disc error)
2. Press the [⏏] (CD1) button to erase the error history (mechanical error or no disc error) and display as bellow.

5. To Release The CD Test Mode

Press the [I/⏻] button to turn the power off.

TABLE OF CONTENTS

SELF-DIAGNOSIS FUNCTION 2

1. SERVICING NOTES 7

2. GENERAL 16

3. DISASSEMBLY 19

4. TEST MODE 32

5. ELECTRICAL ADJUSTMENTS
MD Section 37
CD Section 47

6. DIAGRAMS
6-1. Block Diagram – MD SERVO Section – 49
6-2. Block Diagram – D/A, A/D CONVERTER Section – .. 50
6-3. Block Diagram – MAIN Section 51
6-4. Block Diagram – DISPLAY/POWER Section – 52
6-5. Note for Printed Wiring Boards and Schematic Diagrams 53
6-6. Printed Wiring Board – BD (CD) Board – 54
6-7. Schematic Diagram – BD (CD) Board – 55
6-8. Printed Wiring Boards – CD CHANGER Section – 56
6-9. Schematic Diagram – CD CHANGER Section – 57
6-10. Schematic Diagram – BD (MD) Board (1/2) – 58
6-11. Schematic Diagram – BD (MD) Board (2/2) – 59
6-12. Printed Wiring Boards – BD (MD) Board – 60
6-13. Schematic Diagram – MD DIGITAL Board (1/3) – 61
6-14. Schematic Diagram – MD DIGITAL (2/3)/RELAY Boards – 62
6-15. Schematic Diagram – MD DIGITAL Board (3/3) – 63
6-16. Printed Wiring Board – MD DIGITAL Board (Component Side) – 64
6-17. Printed Wiring Boards – MD DIGITAL (Conductor Side)/RELAY Boards – .. 65
6-18. Schematic Diagram – MAIN Board (1/2) – 66
6-19. Schematic Diagram – MAIN Board (2/2) – 67
6-20. Printed Wiring Board – MAIN Board – 68
6-21. Printed Wiring Board – AMP Board – 70
6-22. Schematic Diagram – AMP Board – 71
6-23. Printed Wiring Boards – JACK/JOG Boards – 72
6-24. Schematic Diagram – JACK/JOG Boards – 73
6-25. Schematic Diagram – PANEL Board – 74
6-26. Printed Wiring Board – PANEL Board – 75
6-27. Printed Wiring Board – REG Board – 76
6-28. Schematic Diagram – REG Board – 77
6-29. Printed Wiring Boards – POWER/SELECTOR Boards – 78
6-30. Schematic Diagram – POWER/SELECTOR Boards – 79
6-31. IC Pin Function Description 83

7. EXPLODED VIEWS 95

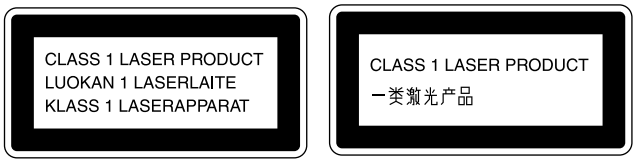
8. ELECTRICAL PARTS LIST 102

Notes on chip component replacement
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing
- Keep the temperature of the soldering iron around 270 ˚C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.



Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

与安全有关的零部件须知

在原理图上用阴影及⚠标记来识别的零部件在安全操作上是具有关键性的。这些零部件要用本手册中所示的部件号对应的索尼零部件进行更换。

在安全操作上具有关键性的电路调整与索尼公司出版的维修手册完全一致。在更换关键零部件时或怀疑动作失常时，请进行这些调整操作。

SECTION 1
SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body.
During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

For CD

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the “S curve check” in “CD section adjustment” and check that the S curve waveforms is output three times.

For MD

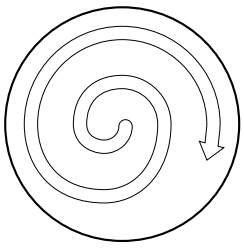
NOTES ON LASER DIODE EMISSION CHECK

Never look into the laser diode emission from right above when checking it for adjustment. It is feared that you will lose your sight.

CLEANING OBJECTIVE LENS OF OPTICAL PICK-UP

- In cleaning the objective lens of optical pick-up, be sure the following below.

1. In cleaning the lens, do not apply an excessive force.
   As the optical pick-up is vulnerable, application of excessive force could damage the lens holder.
2. In cleaning, do not use a cleaner other than exclusive cleaning liquid (KK-91 or isopropyl alcohol).
3. Wipe the objective lens spirally from center toward outside. (See Figure A)

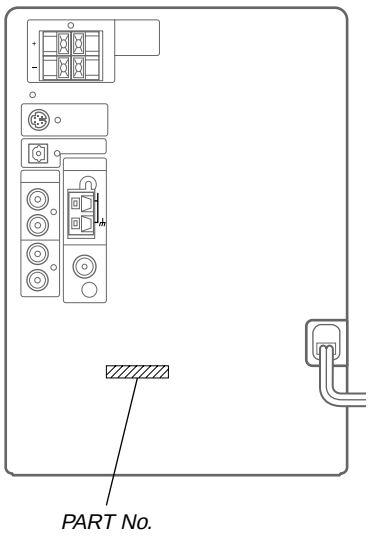


(Figure A)

4. Eject the disk, if loaded.
5. Disconnect the power cord from the socket to shut off the power supply.
6. When cleaning the objective lens of optical pick-up in CD, refer to “CD BASE UNIT (BU-21BD53)” on page 26 for removing CD BASE UNIT (BU-21BD53).

MODEL IDENTIFICATION

— Back panel —



Model	Part No.
Hong Kong model	4-229-859-4[]
Korean model	4-229-859-5[]
Tourist model	4-229-859-6[]

MC COLD RESET

- The cold reset clears all data including preset data stored in the RAM to initial conditions. Execute this mode when returning the set to the customer.

Procedure:

1. Press the I/⏻ button to turn the power on.
2. Press three buttons of ■ , CLEAR and FUNCTION simultaneously.
3. The set is reset, and displays “COLD RESET”, then becomes standby status.

AMP TEST

Procedure:

1. Press the I/⏻ button to turn the power on.
2. Press three buttons of ■ , TUNER/BAND, and ⏏ (CD1) simultaneously.
3. Each buttons are pressed, it changes display as follows.

Button	Display
■	7[TESTMIN]
REC MODE	8[TESTMID]
ENTER/YES	9[TESTMAX]
MD ⏏	10[TESTSUR]

4. VOLUME knob is turned, it changes display as follows.

Turn Direction	Display
counterclockwise	VOLUME MIN
center	VOLUME 21
clockwise	VOLUME MAX

5. To release from this mode, press the I/⏻ button to turn the power off and cold reset.

VERSION DISPLAY

Procedure:

1. Press the I/⏻ button to turn the power on.
2. Press three buttons of ■ , TUNER/BAND and REPEAT simultaneously.
3. Enter the version display mode and display STR version.
4. Each time the ENTER/YES button is pressed, it changes display STR version → CD version → MD version → STR version → ...
5. To release from this mode, press the I/⏻ button to turn the power off.

LCD AND LED TEST

Procedure:

1. Press the I/⏻ button to turn the power on.
2. Press three buttons of ■ , TUNER/BAND and CD2 simultaneously.
3. Liquid crystal display and LEDs are all turned on.
4. Each time the ENTER/YES button is pressed, it changes display all turned on → all goes off → pattern 1 → pattern 2 → all turned on → ...
5. Each time the ■ button is pressed, it changes LED indication all turned on → all goes off → turn on the green LEDs (*1) → turn on the amber LEDs (*1) → all turned on → ...
   *1) The color changable LEDs are “CD ► ❚❚”, “MD ► ❚❚”, “CD1”, “CD2” and “CD3”.
6. To release from this mode, press the I/⏻ button to turn the power off.

KEY TEST

Procedure:

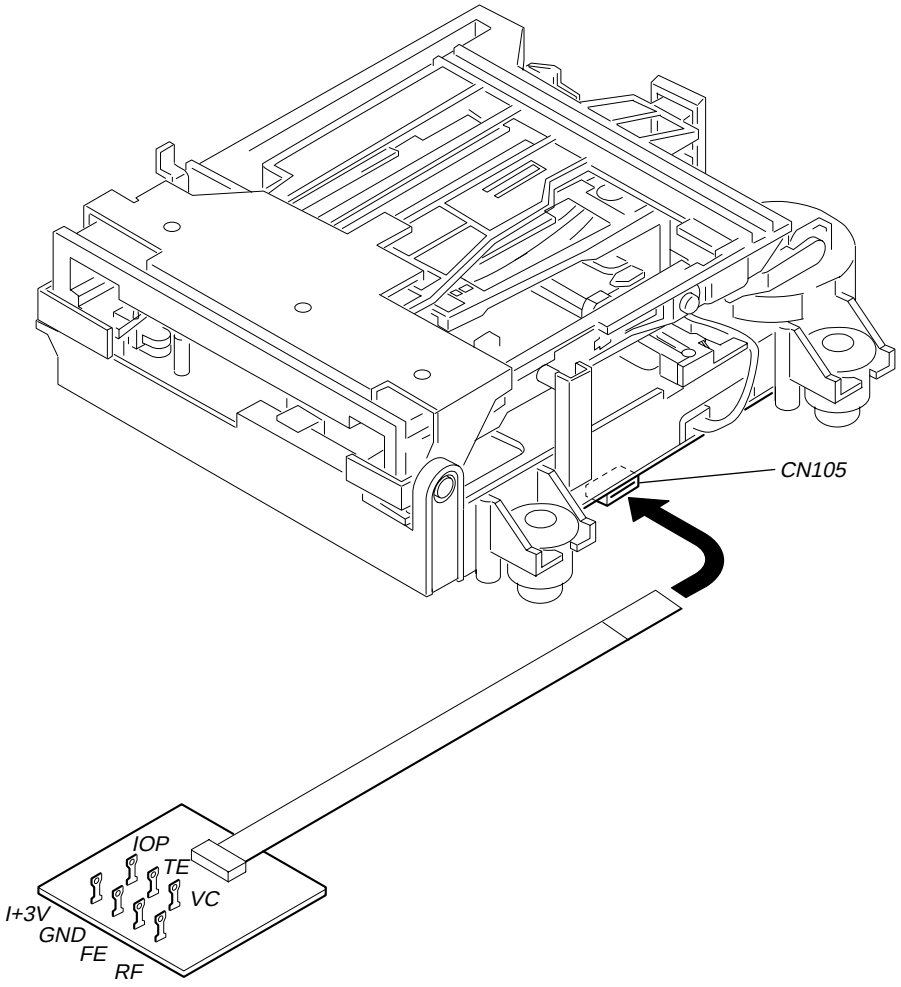
1. Press the I/⏻ button to turn the power on.
2. Press three buttons of ■ , TUNER/BAND and CD1 simultaneously.
3. Enter the key test mode and display “KEY00 JOG0VOL0”.
4. Each time a button (including ◄◄ and ►► of CURSOR knob) is pressed, “KEY” value increases. However, once a button is pressed, it is no longer taken into account.
   “JOG” value increases like 0, 1, 2 ... if turn the ENTER/YES knob clockwise, or it decreases like 9, 8, 7 ... if turn the ENTER/YES knob counterclockwise.
   “VOL” value increases like 0, 1, 2 ... if turn the VOLUME knob clockwise, or it decreases like 9, 8, 7 ... if turn the VOLUME knob counterclockwise.
5. To release from this mode, press three buttons in the same manner as step 2 , or disconnect the power cord.

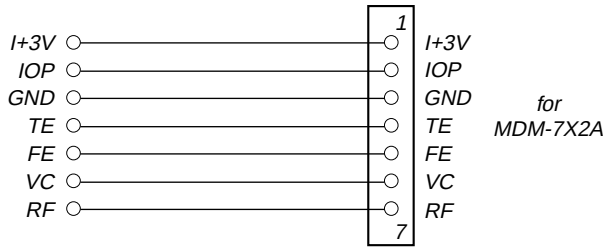
MD SECTION

JIG FOR CHECKING BD (MD) BOARD WAVEFORM

The special jig (J-2501-196-A) is useful for checking the waveform of the BD (MD) board. The names of terminals and the checking items to be performed are shown as follows.

I+3V : For measuring IOP (Check the deterioration of the optical pick-up laser)
IOP : For measuring IOP (Check the deterioration of the optical pick-up laser)
GND : Ground
TE : Tracking error signal (Traverse adjustment)
FE : Focus error signal
VC : Reference level for checking the signal
RF : RF signal (Check jitter)





IOP DATA RECORDING AND DISPLAY WHEN OPTICAL PICK-UP AND NON-VOLATILE MEMORY (IC195 OF BD (MD) BOARD) ARE REPLACED

The IOP value labeled on the optical pick-up can be recorded in the non-volatile memory. By recording the value, it will eliminate the need to look at the value on the label of the optical pick-up. When replacing the optical pick-up or non-volatile memory (IC195 of BD (MD) board), record the IOP value on the optical pick-up according to the following procedure.

Record Procedure:

1. Press the I/⏻ button to turn the power on.
2. Press the FUNCTION button to set the MD function.
3. Press three buttons of ■ , MD ► II and ⏏ (CD3) simultaneously to enter the MD test mode and display "[Check]".
4. Turn the ENTER/YES knob to display "[Service]".
5. Press the ENTER/YES button to display "AUTO CHECK" (C01), and turn the ENTER/YES knob to display "Iop Write" (C05).
6. Press the ENTER/YES button.
7. The display becomes "Ref= @@@.@" (@ is an arbitrary number) and the numbers which can be changed will blink.
8. Input the IOP value written on the optical pick-up.
   To select the number : Turn the ENTER/YES knob.
   To select the digit : After press the CD SYNC NORM SPEED button to lights up the "IT" indication, press the REC MODE button.
9. When the ENTER/YES button is pressed, the display becomes "Measu=@@@.@" (@ is an arbitrary number).
10. As the adjustment results are recorded for the step 8 value. Leave it as it is and press the ENTER/YES button.
11. "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write" (C05).
12. Press the REPEAT button to complete. "Initialize" will be displayed and release the MD test mode.

Display Precedure:

1. Press the I/⏻ button to turn the power on.
2. Press the FUNCTION button to set the MD function.
3. Press three buttons of ■ , MD ► II and ⏏ (CD3) simultaneously to enter the MD test mode and display "[Check]".
4. Turn the ENTER/YES knob to display "[Service]".
5. Press the ENTER/YES button to display "AUTO CHECK" (C01), and turn the ENTER/YES knob to display "Iop Read" (C26).
6. Press the ENTER/YES button.
7. "@@.@/##.#" is displayed and the recorded contents are displayed.
   @@.@ : Indicates the Iop value labeled on the pick-up.
   ##.# : Indicates the Iop value after adjustment.
8. Press the REPEAT button to complete. "Initialize" will be displayed and release the MD test mode.

WHEN MEMORY NG IS DISPLAYED

If the nonvolatile memory data is abnormal, "E001 MEMORY NG" will be displayed so that the MD deck does not continue operations. In this case, set the test mode promptly and perform the following procedure.

Procedure:

1. Enter the MD test mode (refer to page 32).
2. Normally a message for selecting the test mode will be displayed. However if the nonvolatile memory is abnormal, the following will be displayed "INIT EEP?".
3. Press three buttons of ■ , MD ► II and REC MODE simultaneously.
4. Turn the ENTER/YES knob to display "MDM-7X2A".
5. After press the CD SYNC NORM SPEED button to lights up the "IT" indication, press the REC MODE button. If the nonvolatile memory is successfully overwritten, the normal MD test mode will be set and a message to select the MD test mode will be displayed.

RETRY CAUSE DISPLAY MODE IN MD

- In this test mode, the causes for retry of the unit during recording can be displayed on the liquid crystal display. During playback, the "track mode" for obtaining track information will be set.
  This is useful for locating the faulty part of the unit.
- The following will be displayed :
  During recording and stop : Retry cause, number of retries, and number of retry errors.
  During playback : Information such as type of disc played, part played, copyright.
  These are displayed in hexadecimal.

Precedure:

1. Load a recordable disc whose contents can be erased into the unit.
2. Press the [MENU/NO] button. When "Edit Menu" is displayed on the liquid crystal display, turn the [ENTER/YES] knob to display "All Erase?".
3. Press the [ENTER/YES] button.
4. "All Erase??" is displayed on the liquid crystal display.
5. Press the [ENTER/YES] button to display "Complete!".
6. Press the [REC/REC IT] button to start recording. Then press the [MD ► II] button and start recording. If recording cannot be performed, press the [FUNCTION] button and set a different function.
7. Press three buttons of [■] , [MD ► II] and [CD1] simultaneously to enter the retry cause display mode.
8. To check the "track mode", press the [MD ► II] button to start playback.
9. To release this mode, press the [I/⏻] button to turn the power off. When "TOC" goes off, disconnect the power plug from the outlet. If the test mode cannot be released, refer to "MC COLD RESET" on page 8.

Fig. 1 Reading the Test Mode Display (During recording and stop)

[RTs@@c##e**]
Liquid crystal display

@@ : Cause of retry
: Number of retries
** : Number of retry errors

Fig. 2 Reading the Test Mode Display (During playback)

[@@ ###** $$]
Liquid crystal display

@@ : Parts No. (name of area named on TOC)
: Cluster } Address
** : Sector }
$$: Track mode (Track information such as copy-right information of each part)

Reading the Retry Cause Display

	Higher Bits				Lower Bits				Hexa-decimal	Cause of Retry	Occurring conditions
Hexadecimal	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0			
Binary	0	0	0	0	0	0	0	1	01	shock	When track jump (shock) is detected
	0	0	0	0	0	0	1	0	02	ader5	When ADER was counted more than five times continuously
	0	0	0	0	0	1	0	0	04	Discontinuous address	When ADIP address is not continuous
	0	0	0	0	1	0	0	0	08	DIN unlock	When DIN unlock is detected
	0	0	0	1	0	0	0	0	10	FCS incorrect	When not in focus
	0	0	1	0	0	0	0	0	20	IVR rec error	When ABCD signal level exceeds the specified range
	0	1	0	0	0	0	0	0	40	CLV unlock	When CLV is unlocked
	1	0	0	0	0	0	0	0	80	Access fault	When access operation is not performed normally

Reading the Display:
Convert the hexadecimal display into binary display. If more than two causes, they will be added.

Example

When 42 is displayed:
Higher bit : 4 = 0100 ⟶ b6
Lower bit : 2 = 0010 ⟶ b1
In this case, the retry cause is combined of "CLV unlock" and "ader5".

When A2 is displayed:
Higher bit : A = 1010 ⟶ b7 + b5
Lower bit : 2 = 0010 ⟶ b1
The retry cause in this case is combined of "Access fault", "IVR rec error", and "ader5".

Reading the Retry Cause Display

	Higher Bits				Lower Bits				Hexa-decimal	Details	
Hexadecimal	8	4	2	1	8	4	2	1			
Bit	b7	b6	b5	b4	b3	b2	b1	b0		When 0	When 1
Binary	0	0	0	0	0	0	0	1	01	Emphasis OFF	Emphasis ON
	0	0	0	0	0	0	1	0	02	Monaural	Stereo
	0	0	0	0	0	1	0	0	04	This is 2-bit display. Normally 01. 01: Normal audio. Others: Invalid	
	0	0	0	0	1	0	0	0	08		
	0	0	0	1	0	0	0	0	10	Audio (Normal)	Invalid
	0	0	1	0	0	0	0	0	20	Original	Digital copy
	0	1	0	0	0	0	0	0	40	Copyright	No copyright
	1	0	0	0	0	0	0	0	80	Write prohibited	Write allowed

Reading the Display:
Convert the hexadecimal display into binary display. If more than two causes, they will be added.

Example When 84 is displayed:
Higher bit: 8 = 1000 ⟶ b7
Lower bit : 4 = 0100 ⟶ b2
In this case, as b2 and b7 are 1 and others are 0, it can be determined that the retry cause is combined of “Emphasis OFF”, “Monaural”, “Original”, “Copyright”, and “Write allowed”.

Example When 07 is displayed:
Higher bit: 0 = 0000 ⟶ All 0
Lower bit : 7 = 0111 ⟶ b0 + b1 + b2
In this case, as b0, b1, and b2 are 1 and others are 0, it can be determined that the retry cause is combined of “Emphasis ON”, “Stereo”, “Original”, “Copyright”, and “Write prohibited”.

Hexadecimal ⟶ Binary Conversion Table

Hexadecimal	Binary	Hexadecimal	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

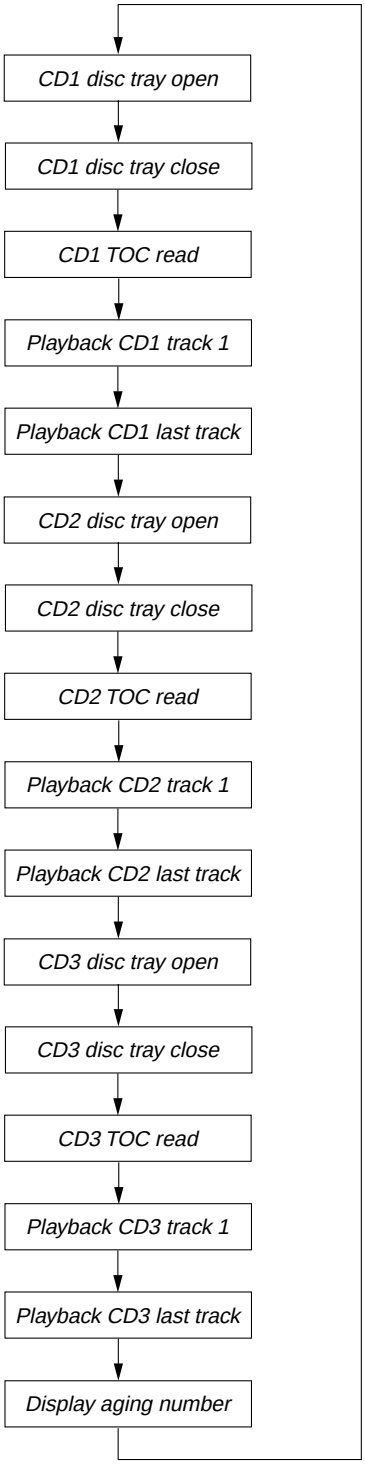
CD SECTION

CD AGING MODE

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to set the CD function, insert a disc to the each disc tray (CD1 to 3).
3. Press three buttons of [■] , [ENTER/YES] and [CD3] simultaneously (When releasing the buttons, the [ENTER/YES] button is the last to be released).
4. The set displays “AGING SEL=00”. Between it is displayed, press the [⏏] (CD1) button to start CD aging mode.
5. The sequence during the CD aging mode is following as below.

CD aging mode sequence:



6. To release from this mode, press the [I/⏻] button to turn the power off.

Note: Refer to “Error History Display Mode” (page 5) for display at an error occurred.

CD-TEXT TEST DISC

This unit is able to display the test data (character information) written in the CD on its fluorescent indicator tube.
The CD-TEXT TEST DISC (TGCS-313:4-989-366-01) is used for checking the display.
To check, perform the following procedure.

Checking Method:

1. Press the I/⏻ button to turn the power on, set the disc to the disc table with the “test disc” label facing up, and chuck the disc.
2. Press the CD ► II button and playback the disc.
3. The following will be displayed on the liquid crystal display.
   Display : 1kHz/0db/L&R
4. Pressing the I◄◄ ◄◄ or ►► ►►I button, select the track. The text data of each track will be displayed.
   For details of the displayed contents for each track, refer to “Table 1 : CD-TEXT TEST DISC TEXT Data Contents” and “Table 2 : CD-TEXT TEST DISC Recorded Contents and Display”.

Restrictions in CD-TEXT Display

In this unit, some special characters will not be displayed properly. These will be displayed as a space or a character resembling it. For details, refer to “Table 2 : CD-TEXT DISC Recorded Contents and Display”.

Table 1 : CD-TEXT TEST DISC TEXT Data Contents (TRACKS No. 1 to 41:Normal Characters)

TRACK No.	Displayed Contents	TRACK No.	Displayed Contents
1	1kHz/0dB/L&R	22	1kHz/–90dB/L&R
2	20Hz/0dB/L&R	23	Infinity Zero w/o emphasis//L&R
3	40Hz/0dB/L&R	24	Infinity Zero with emphasis//L&R
4	100Hz/0dB/L&R	25	400Hz+7kHz(4:1)/0dB/L&R
5	200Hz/0dB/L&R	26	400Hz+7kHz(4:1)/–10dB/L&R
6	500Hz/0dB/L&R	27	19kHz+20kHz(1:1)/0dB/L&R
7	1kHz/0dB/L&R	28	19kHz+20kHz(1:1)/–10dB/L&R
8	5kHz/0dB/L&R	29	100Hz/0dB/L*
9	7kHz/0dB/L&R	30	1kHz/0dB/L*
10	10kHz/0dB/L&R	31	10kHz/0dB/L*
11	16kHz/0dB/L&R	32	20kHz/0dB/L*
12	18kHz/0dB/L&R	33	100Hz/0dB/R*
13	20kHz/0dB/L&R	34	1kHz/0dB/R*
14	1kHz/0dB/L&R	35	10kHz/0dB/R*
15	1kHz/–1dB/L&R	36	20kHz/0dB/R*
16	1kHz/–3dB/L&R	37	100Hz Squer Wave//L&R
17	1kHz/–6dB/L&R	38	1kHz Squer Wave//L&R
18	1kHz/–10dB/L&R	39	1kHz w/emphasis/–0.37dB/L&R
19	1kHz/–20dB/L&R	40	5kHz w/emphasis/–4.53dB/L&R
20	1kHz/–60dB/L&R	41	16kHz w/emphasis/–9.04dB/L&R
21	1kHz/–80dB/L&R		

Note: The contents of Track No. 1 to 41 are the same as those of the current TEST DISC-their titles are displayed.

Table 2: CD-TEXT TEST DISC Recorded Contents and Display

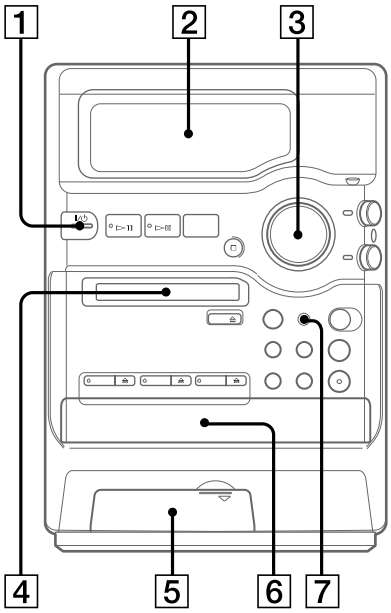
(In this unit, some special characters cannot be displayed. This is not a fault)

TRACK No.	Recorded contents	Display
42	! " # $ % & ´ (21h to 27h)1kHz 0dB L&R	← All the same
43	( ) * + , – . / (28h to 2Fh)	← All the same
44	0 1 2 3 4 5 6 7 (30h to 37h)	← All the same
45	8 9 : ; < = > ? (38h to 3Fh)	← All the same
46	@A B C D E F G (40h to 47h)	← All the same
47	H I J K L M N O (48h to 4Fh)	← All the same
48	P Q R S T U V W (50h to 57h)	← All the same
49	X Y Z [¥] ^ _ (58h to 5Fh)	X Y Z [\ ] ^ _ (58h to 5Fh)
50	` a b c d e f g (60h to 67h)	← All the same
51	h i j k l m n o (68h to 6Fh)	← All the same
52	p q r s t u v w (70h to 77h)	← All the same
53	x y z { l } ~ ▌ (78h to 7Fh)	← All the same
54	▌ ¡ ¢ £ ¤ ¥ ¦ § (A0h to A7h) 8859-1	(A0h to A7h) 8859-1
55	♪ © ª « ¬ ® ¯ (A8h to AFh)	(A8h to AFh)
56	· ± ² ³ ´ µ ¶ • (B0h to B7h)	(B0h to B7h)
57	† ¹ º » ¼ ½ ¾ ¿ (B8h to BFh)	(B8h to BFh)
58	À Á Â Ã Ä Å Æ Ç (C0h to C7h)	A A A A A A C (C0h to C7h)
59	È É Ê Ë Ì Í Î Ï (C8h to CFh)	E E E E I I I I (C8h to CFh)
60	Ð Ñ Ò Ó Ô Õ Ö × (D0h to D7h)	D N O O O O O (D0h to D7h)
61	Ø Ù Ú Û Ü Ý Þ ß (D8h to DFh)	O U U U U Y (D8h to DFh)
62	à á â ã ä å æ ç (E0h to E7h)	a a a a a a c (E0h to E7h)
63	è é ê ë ì í î ï (E8h to FFh)	e e e e i i i i (E8h to EFh)
64	ð ñ ò ó ô õ ö ÷ (F0h to F7h)	d n o o o o o (F0h to F7h)
65	ø ù ú û ü ý Þ ÿ (F8h to FFh)	o u u u u y y (F8h to FFh)
66	No.66	← All the same
67 to 99	No.67 to No.99	← All the same to ← All the same

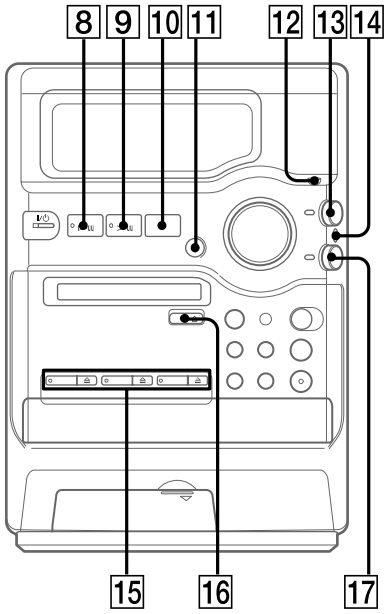
SECTION 2
GENERAL

LOCATION OF CONTROLS

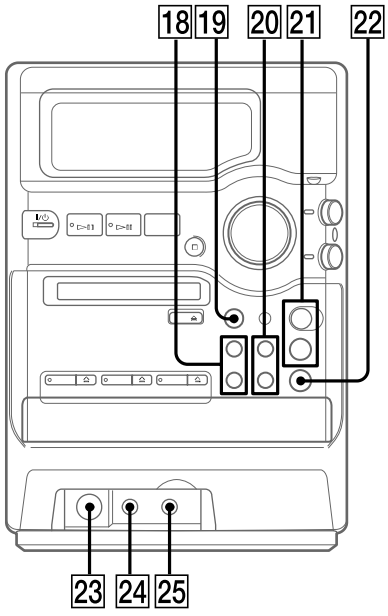
- **Front View**



1 I/⏻ button and indicator
2 Liquid crystal display
3 VOLUME knob
4 MD disc slot
5 Lid
6 CD disc tray
7 Remote sensor

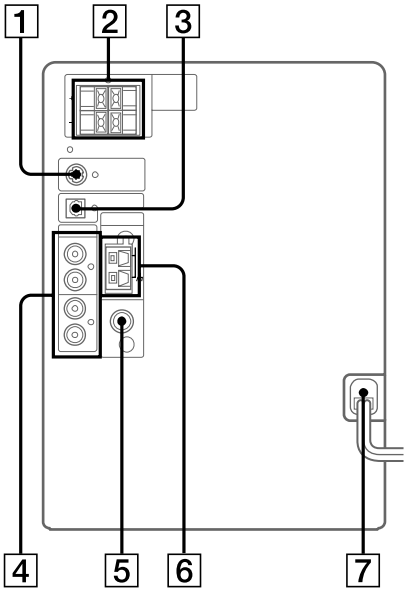


8 CD ► II button and indicator
9 MD ► II button and indicator
10 TUNER/BAND button and indicator
11 ■ button
12 MENU/NO button and indicator
13 ENTER/YES, PUSH knob and button
14 CLEAR button
15 CD1 to 3 buttons and indicators,
⏏ (CD1 to 3) buttons
16 MD ⏏ button
17 CURSOR ◄◄ ▬▬ ►► knob



18 PLAY MODE, TUNING MODE button
19 FUNCTION button
20 SYNC MODE, REC MODE button
21 CD SYNC HIGH SPEED button and indicator,
CD SYNC NORM SPEED button
22 REC/REC IT button and indicator
23 PC LINK/KEY BOARD jack
24 PHONES jack
25 ANALOG IN jack

• **Rear View**



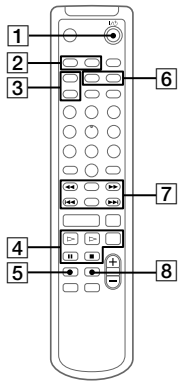
1 PC LINK jack
2 SPEAKER terminals
3 DIGITAL OPTICAL IN terminal
4 TAPE IN/OUT jacks
5 FM ANTENNA jack
6 AM ANTENNA terminals
7 AC power cord

Parts descriptions for the remote

You can use the supplied remote to control the system.

Note

You cannot perform the following operations with the remote;
Ñ Removing discs
Ñ Selecting the recording mode
Ñ CD-MD Synchro Recording



1 **I/⏻ (power) switch**

2 **CLOCK/TIMER SELECT button**
Press to check timer settings, or to set the timer on/off. (pages 58, 59)

CLOCK/TIMER SET button
Press to set the clock and timer functions. (pages 6, 57, 58)

3 **TIME button**
Press to switch the contents appearing on the lower level of the display (CD/MD play time mode, etc.). (pages 7, 19, 24)

DISPLAY button
Press to switch the contents appearing on the upper level of the display (preset equalizer name, clock, disc name/track name/radio station name, volume, etc.). (pages 7, 19, 24)

4 **MD ▷ (play) button**

CD ▷ (play) button

II (pause) button

■ (stop) button

D.SKIP button
Press to select the CD you want to play, record or edit.

5 **MD ● REC button**
Press to record. This button is also used to mark a track number manually during recording. (pages 36, 37)

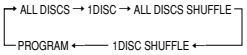
continued

Parts descriptions for the remote (continued)

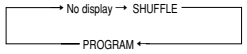
6 **PLAY MODE/TUNING MODE button**
This functions as the PLAY MODE button when playing a CD or MD. Press to select normal play, Shuffle Play or Programme Play. (pages 9, 16, 17, 22, 23)
Each time you press the button, the display changes as follows.

During play (CD only):
1DISC ↔ ALL DISCS

In stop mode (CD):



In stop mode (MD):



This functions as the TUNING MODE button when listening to the radio. Press to select MANUAL, AUTO or PRESET tuning.

REPEAT button
Press to play a track or all the tracks repeatedly. (pages 16, 22)

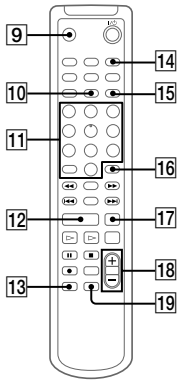
7 **←CURSOR/CURSOR→, ◀◀/▶▶ buttons**
The ◀◀/▶▶ buttons locate a desired point in a track during MD play or pause, or during CD play or pause.
Press to label a CD, MD and preset station, or to set the clock. (pages 6, 20, 41, 55)

/+, I◀◀/▶▶I (AMS: Automatic Music Sensor) buttons
Press to skip to the beginning of the next track or the previous track when playing a CD or MD.
Press to tune the frequency when listening to the radio.
These buttons are also used to set the clock, make the Programme Play setting, adjust the recording level, and select characters to be entered, etc.

ENTER/YES button
Press to set the clock, Programme Play and to label a CD, MD and preset station, or to enter the settings in ÔEdit MenuÓ or ÔSetup MenuÓ

MENU/NO button
Press to label a CD, MD and preset station.

8 **TIME MACHINE REC button (page 34)**



9 SLEEP button
Press to set Sleep Timer. (page 56)

10 NAME EDIT/SELECT button
Press to display the text input screen and to select the type of characters to be input. (pages 20, 41, 55)

11 Letter/Number buttons
Press to select track numbers of a CD, MD, or preset station.
Press to enter the corresponding letter or number at the character input screen. (pages 20, 41, 55)

12 FUNCTION button
Press to switch the sound source.
Each time you press this button, the sound source changes as follows;

CD → TUNER → OPTICAL IN → ANALOG IN → MD → TAPE → CD

13 PRESET EQ button
Press to select the type of the preset equalizer. (page 54)

14 STEREO/MONO button
Press to switch between stereo and monaural when receiving a stereo broadcast.

15 SCROLL button
Press to display the disc title or track title scrolling. (pages 19, 21, 25, 42)

16 CLEAR button
Press to cancel the selection. (pages 18, 21, 23, 42, 56)

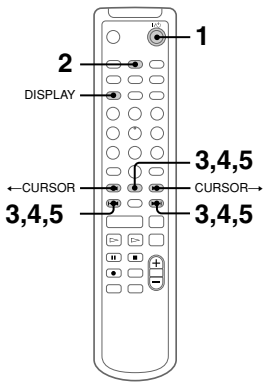
17 TUNER/BAND button
Press to select the tuner for the sound source, or to select the FM or AM band.

18 VOLUME +/ buttons
Press to adjust the volume.

19 DBFB button
Press to reinforce the bass sound. (page 54)

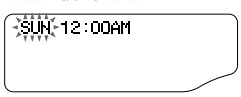
Step 2: Setting the time

You must set the time beforehand to use the timer functions.



1 Turn on the system.

2 Press CLOCK/TIMER SET.
The time setting display appears, and the day indication ÒSUNÓflashes.



3 Press —or + to set the day, then press ENTER/YES or CURSOR→.
The hour indication flashes.
(Noon is indicated as 12:00 PM, and midnight as 12:00 AM.)

4 Press —or + to set the hour, then press ENTER/YES or CURSOR→.
The minute indication flashes.

5 Press —or + to set the minute, then press ENTER/YES.
The clock starts.

If you made a mistake

Press ←CURSOR or CURSOR→ until the indication you wish to change (day, hour, minute) flashes, then change the setting.

To cancel setting the time

Press CLOCK/TIMER SET.

Showing the time

In consideration of reducing standby power, this system can select whether or not to display the clock in standby mode. The system is set at the factory to not display the clock when the system is off (**Power Saving Mode**). To display the clock even when the system is off, press DISPLAY or TIME while the system is off. Press the button again to turn the clock display off and activate the Power Saving Mode.

While the system is on, the information that appears at the upper level of the display changes as follows each time you press DISPLAY.

Preset Equalizer name → Clock → Volume → Name*

* Displayed only when disc title, track title, radio station name or other name information is labelled. Nothing appears when this information is not labelled.

Tip

The upper dot of the clock display flashes for the first half of a minute (0 to 29 seconds), and the lower dot flashes for the last half of a minute (30 to 59 seconds).

Changing the preset time

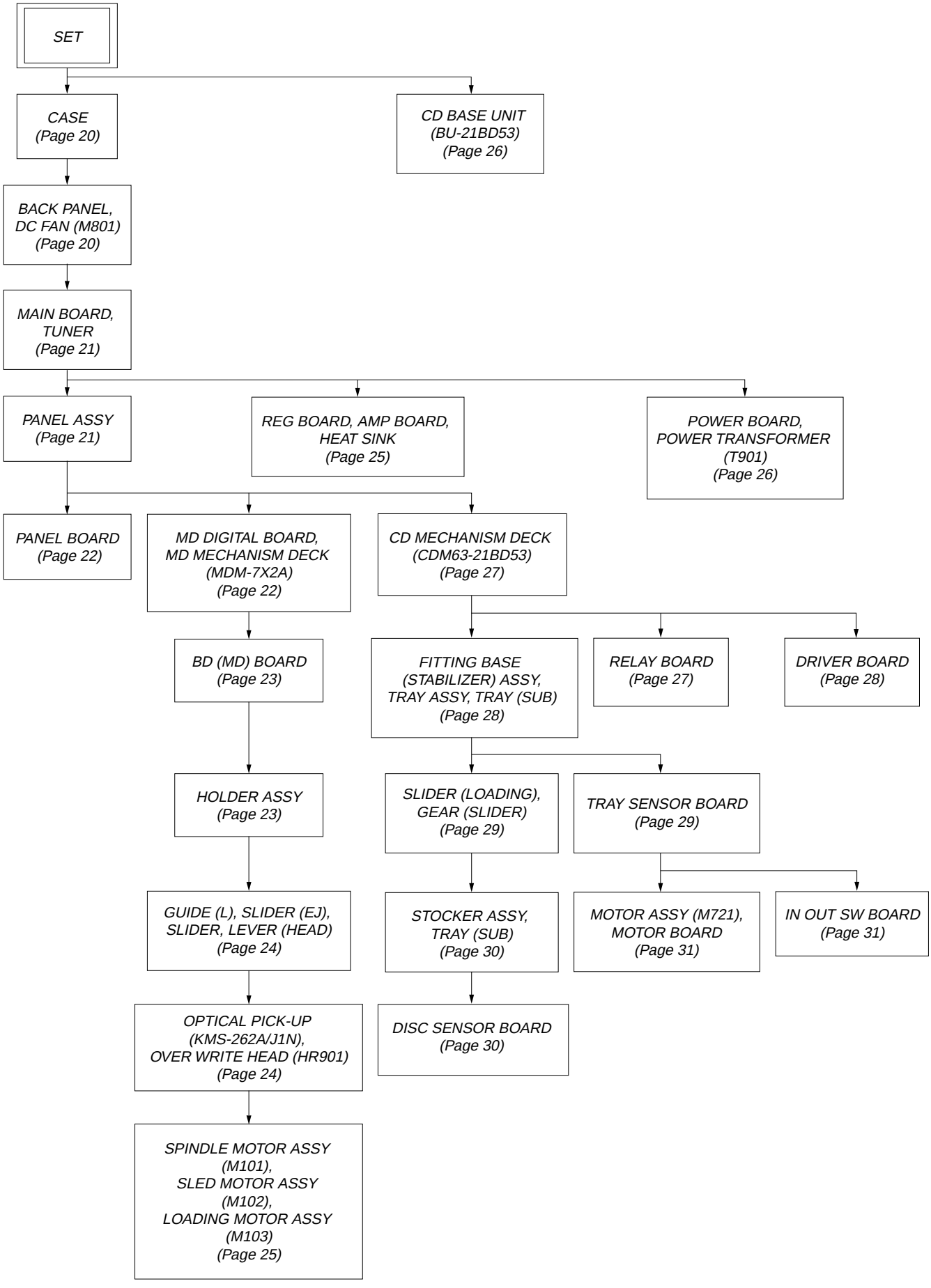
1 Press CLOCK/TIMER SET, then press —or + until ÒCLOCK SET?Óappears. Press ENTER/YES.

2 Repeat steps 3 to 5 of Òsetting the timeÓ

You can change the preset time while the system is off. In this case, perform steps 2 to 5 of Òsetting the timeÓ

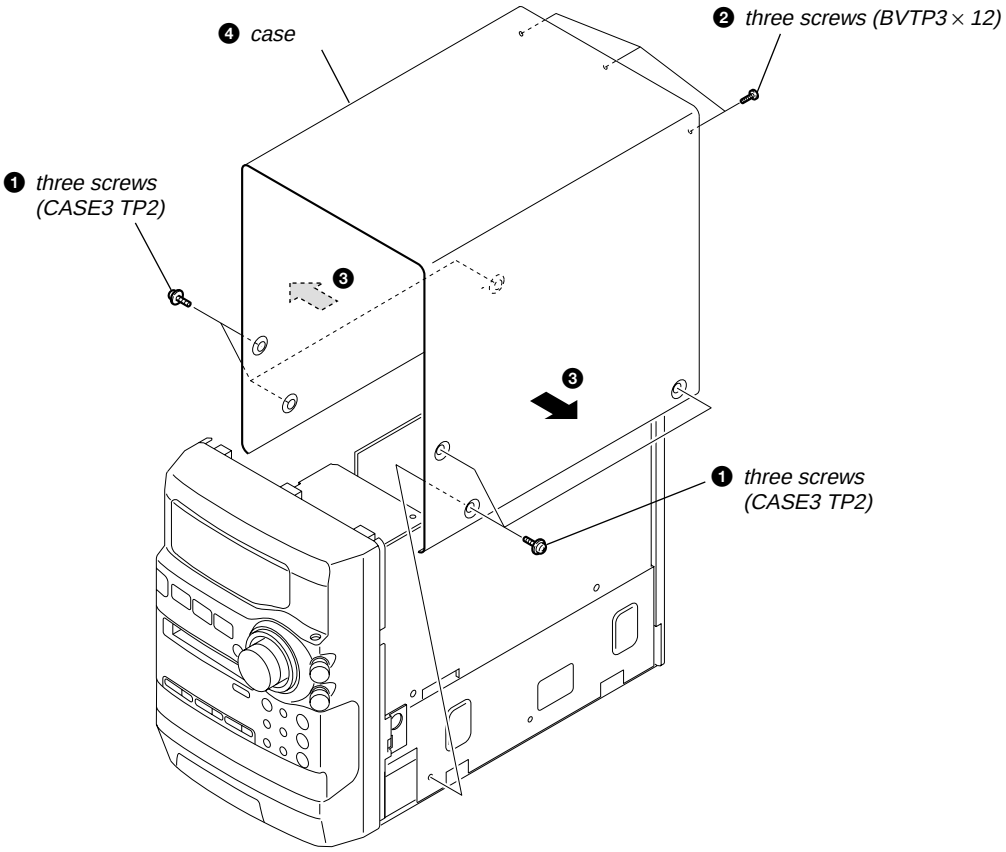
SECTION 3
DISASSEMBLY

- This set can be disassembled in the order shown below.

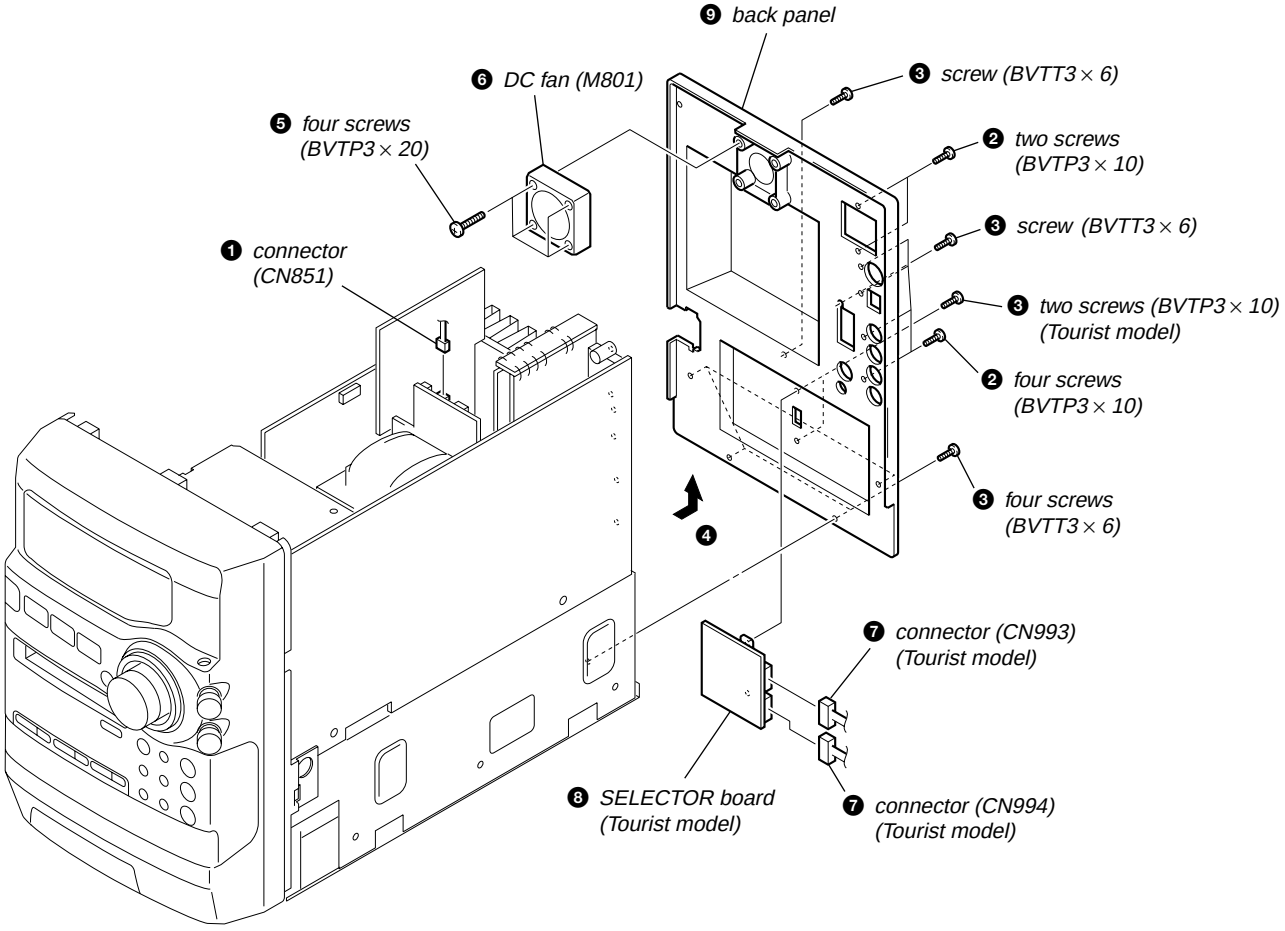

SET
CASE (Page 20)
CD BASE UNIT (BU-21BD53) (Page 26)
BACK PANEL, DC FAN (M801) (Page 20)
MAIN BOARD, TUNER (Page 21)
PANEL ASSY (Page 21)
REG BOARD, AMP BOARD, HEAT SINK (Page 25)
POWER BOARD, POWER TRANSFORMER (T901) (Page 26)
PANEL BOARD (Page 22)
MD DIGITAL BOARD, MD MECHANISM DECK (MDM-7X2A) (Page 22)
CD MECHANISM DECK (CDM63-21BD53) (Page 27)
BD (MD) BOARD (Page 23)
FITTING BASE (STABILIZER) ASSY, TRAY ASSY, TRAY (SUB) (Page 28)
RELAY BOARD (Page 27)
DRIVER BOARD (Page 28)
HOLDER ASSY (Page 23)
SLIDER (LOADING), GEAR (SLIDER) (Page 29)
TRAY SENSOR BOARD (Page 29)
GUIDE (L), SLIDER (EJ), SLIDER, LEVER (HEAD) (Page 24)
STOCKER ASSY, TRAY (SUB) (Page 30)
MOTOR ASSY (M721), MOTOR BOARD (Page 31)
IN OUT SW BOARD (Page 31)
OPTICAL PICK-UP (KMS-262A/J1N), OVER WRITE HEAD (HR901) (Page 24)
DISC SENSOR BOARD (Page 30)
SPINDLE MOTOR ASSY (M101), SLED MOTOR ASSY (M102), LOADING MOTOR ASSY (M103) (Page 25)

Note: Follow the disassembly procedure in the numerical order given.

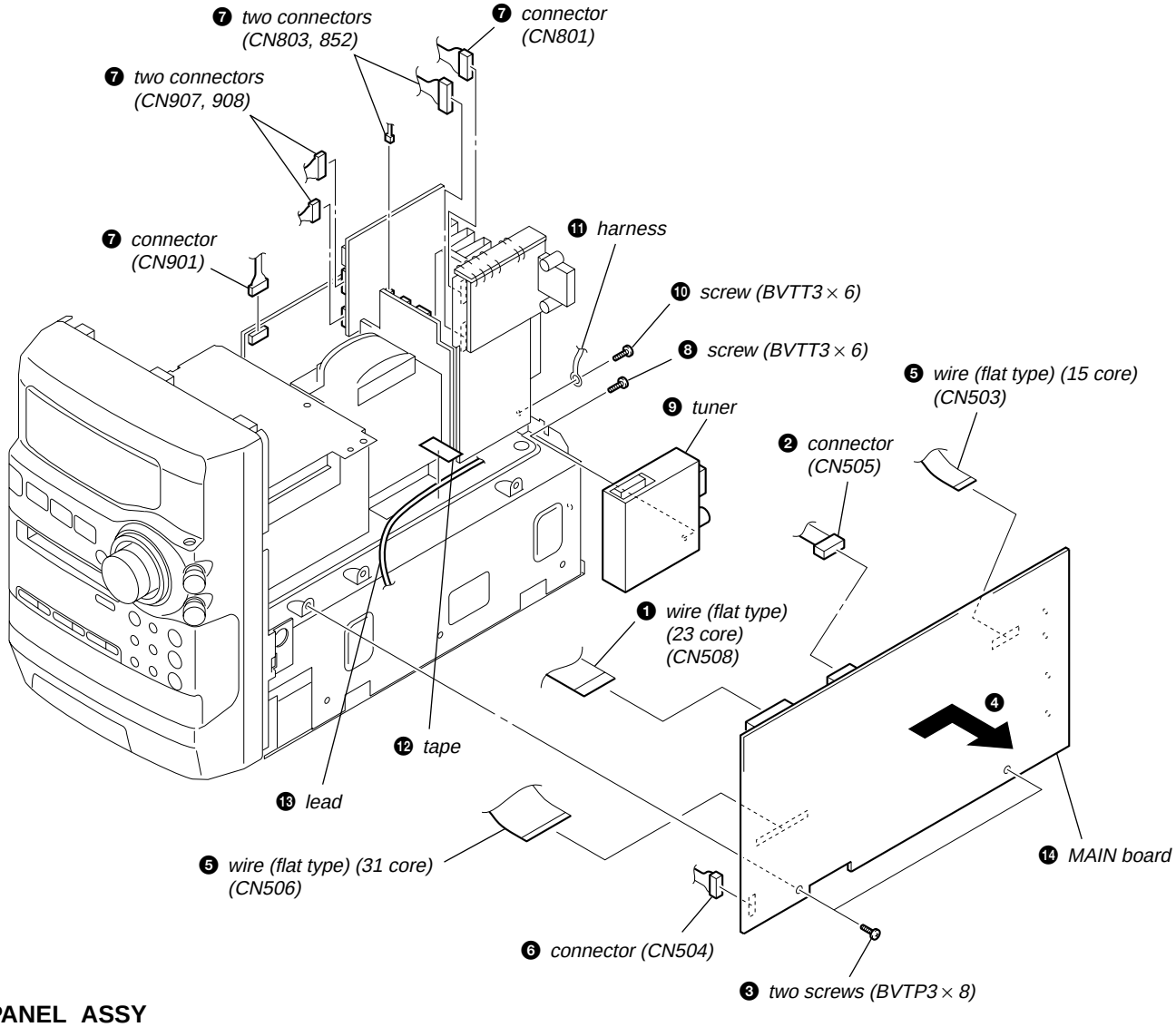
CASE



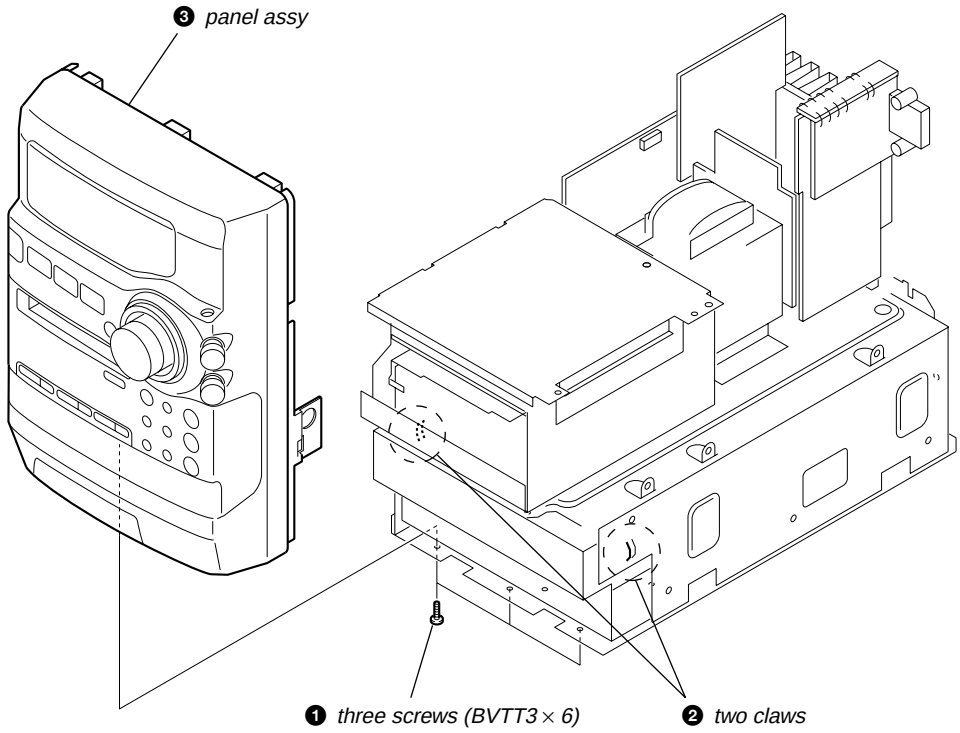
BACK PANEL, DC FAN (M801)


❾ back panel
❻ DC fan (M801)
❸ screw (BVTT3 × 6)
❺ four screws (BVTP3 × 20)
❷ two screws (BVTP3 × 10)
❶ connector (CN851)
❸ screw (BVTT3 × 6)
❸ two screws (BVTP3 × 10) (Tourist model)
❷ four screws (BVTP3 × 10)
❸ four screws (BVTT3 × 6)
❹
❼ connector (CN993) (Tourist model)
❽ SELECTOR board (Tourist model)
❼ connector (CN994) (Tourist model)

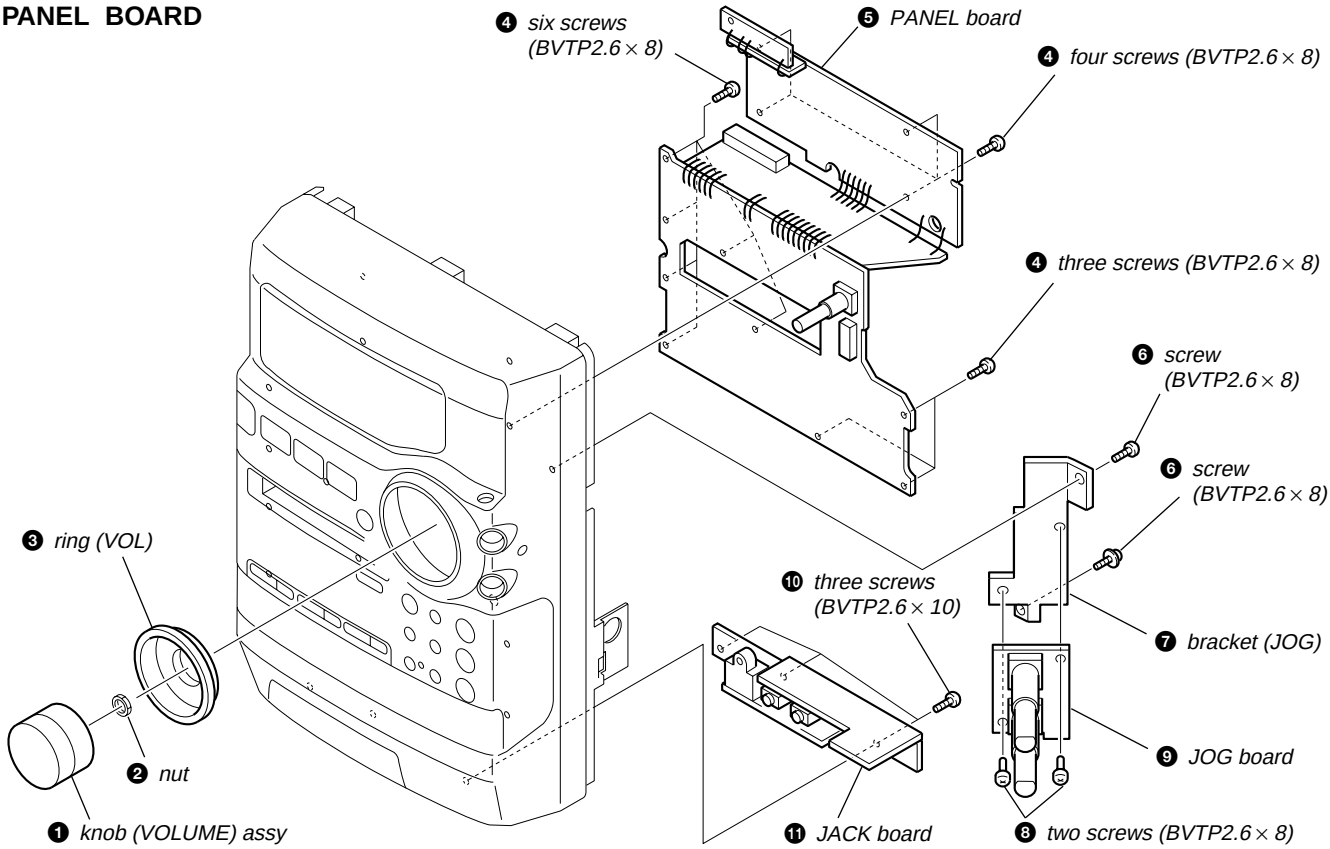
MAIN BOARD, TUNER



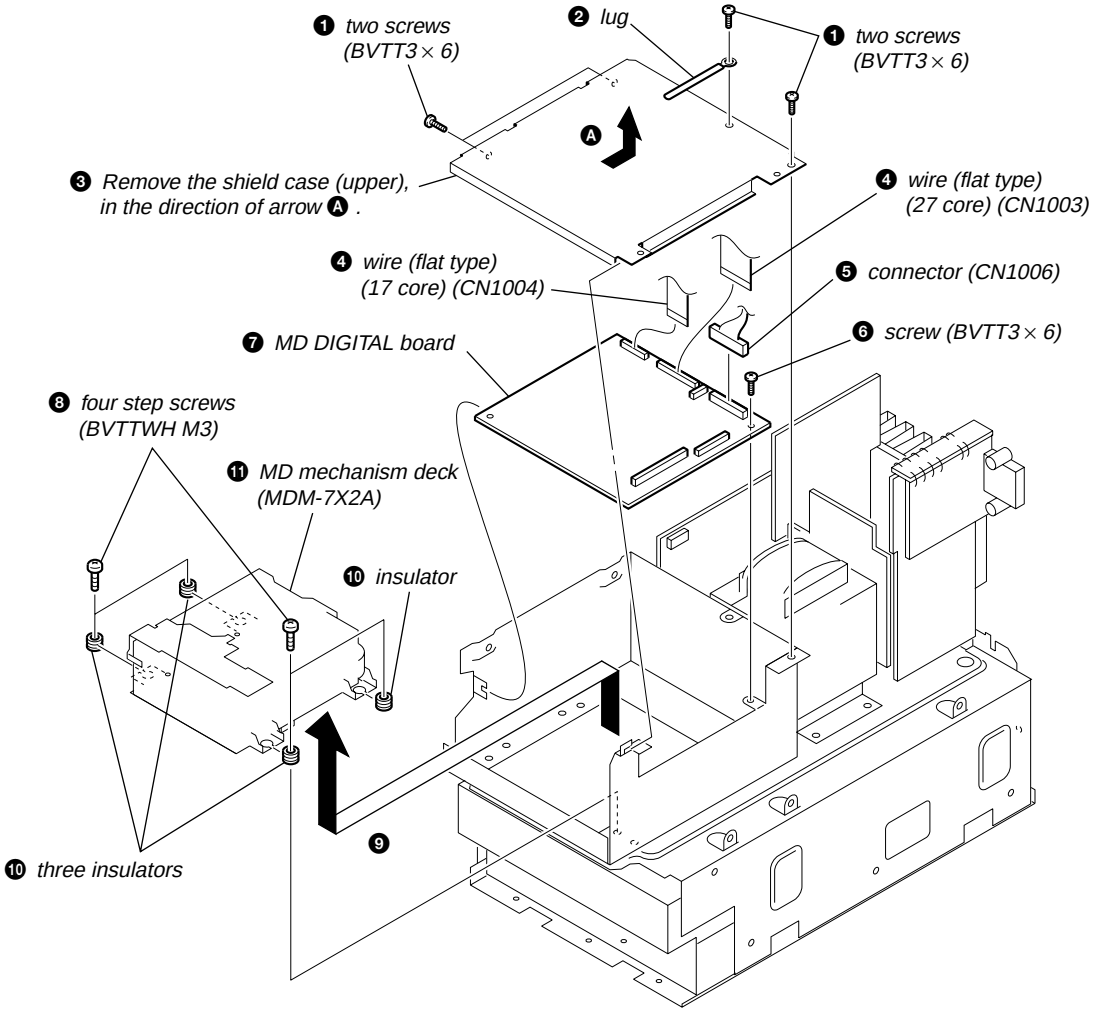
PANEL ASSY



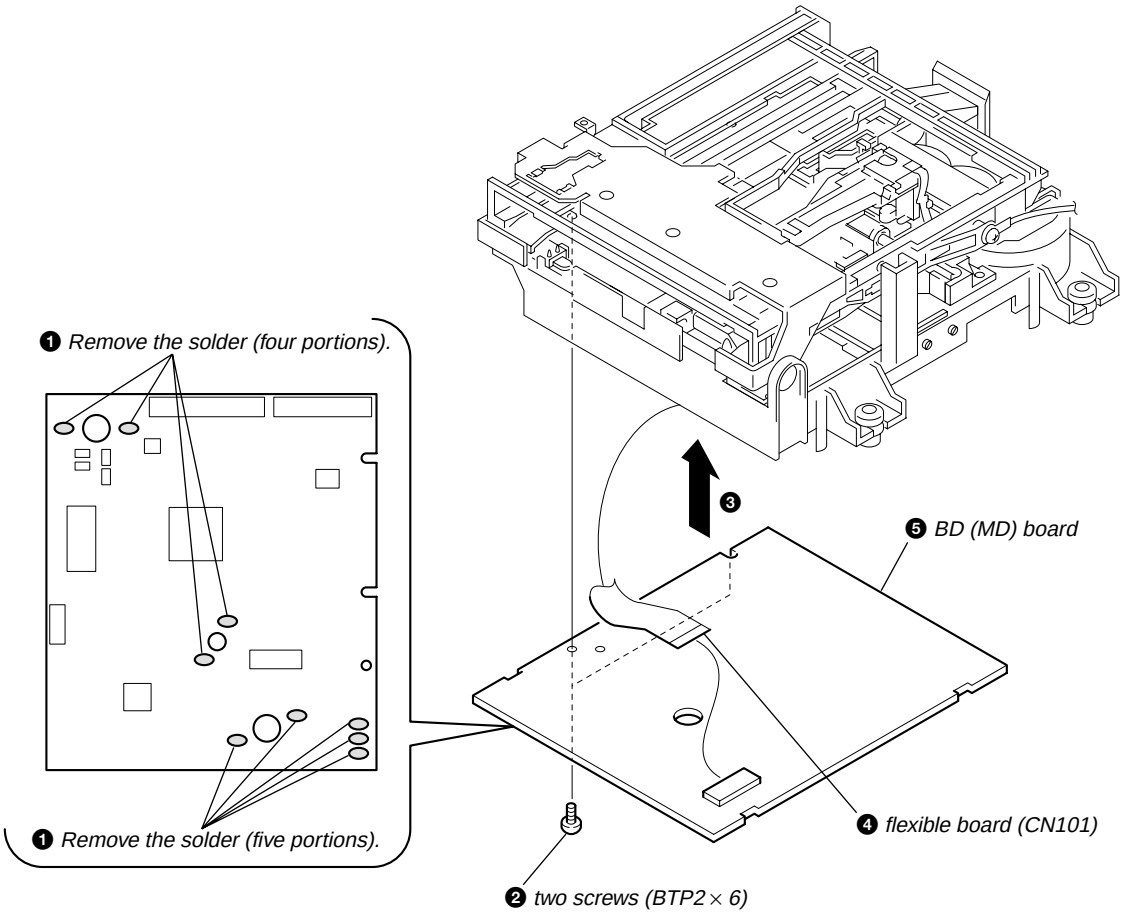
PANEL BOARD


❹ six screws (BVTP2.6 × 8)
❺ PANEL board
❹ four screws (BVTP2.6 × 8)
❹ three screws (BVTP2.6 × 8)
❻ screw (BVTP2.6 × 8)
❻ screw (BVTP2.6 × 8)
❸ ring (VOL)
❿ three screws (BVTP2.6 × 10)
❼ bracket (JOG)
❾ JOG board
❷ nut
❶ knob (VOLUME) assy
⓫ JACK board
❽ two screws (BVTP2.6 × 8)

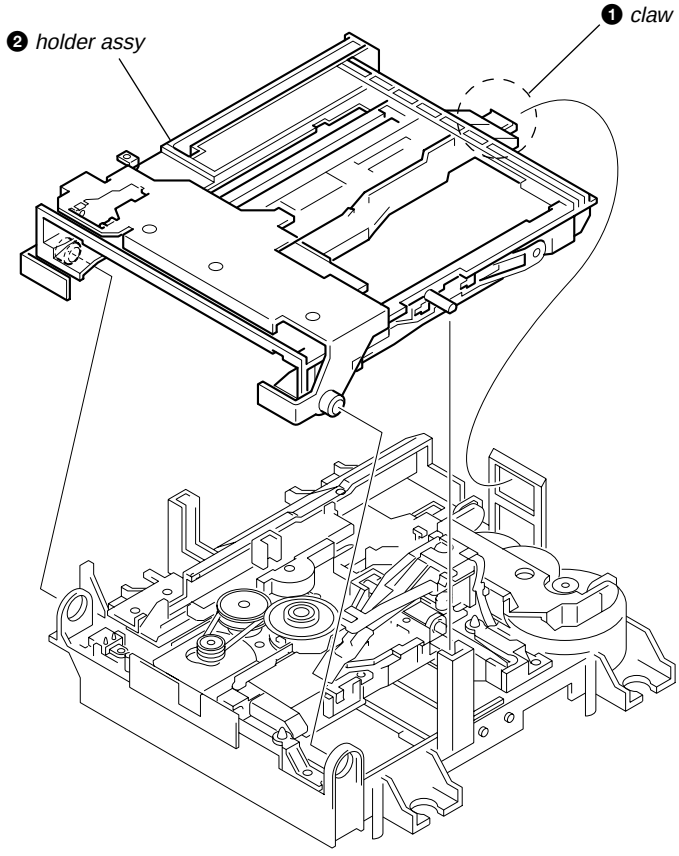
MD DIGITAL BOARD, MD MECHANISM DECK (MDM-7X2A)


❶ two screws (BVTT3 × 6)
❷ lug
❶ two screws (BVTT3 × 6)
Ⓐ
❸ Remove the shield case (upper), in the direction of arrow Ⓐ .
❹ wire (flat type) (27 core) (CN1003)
❹ wire (flat type) (17 core) (CN1004)
❺ connector (CN1006)
❼ MD DIGITAL board
❻ screw (BVTT3 × 6)
❽ four step screws (BVTTWH M3)
⓫ MD mechanism deck (MDM-7X2A)
⓾ insulator
❾
⓾ three insulators

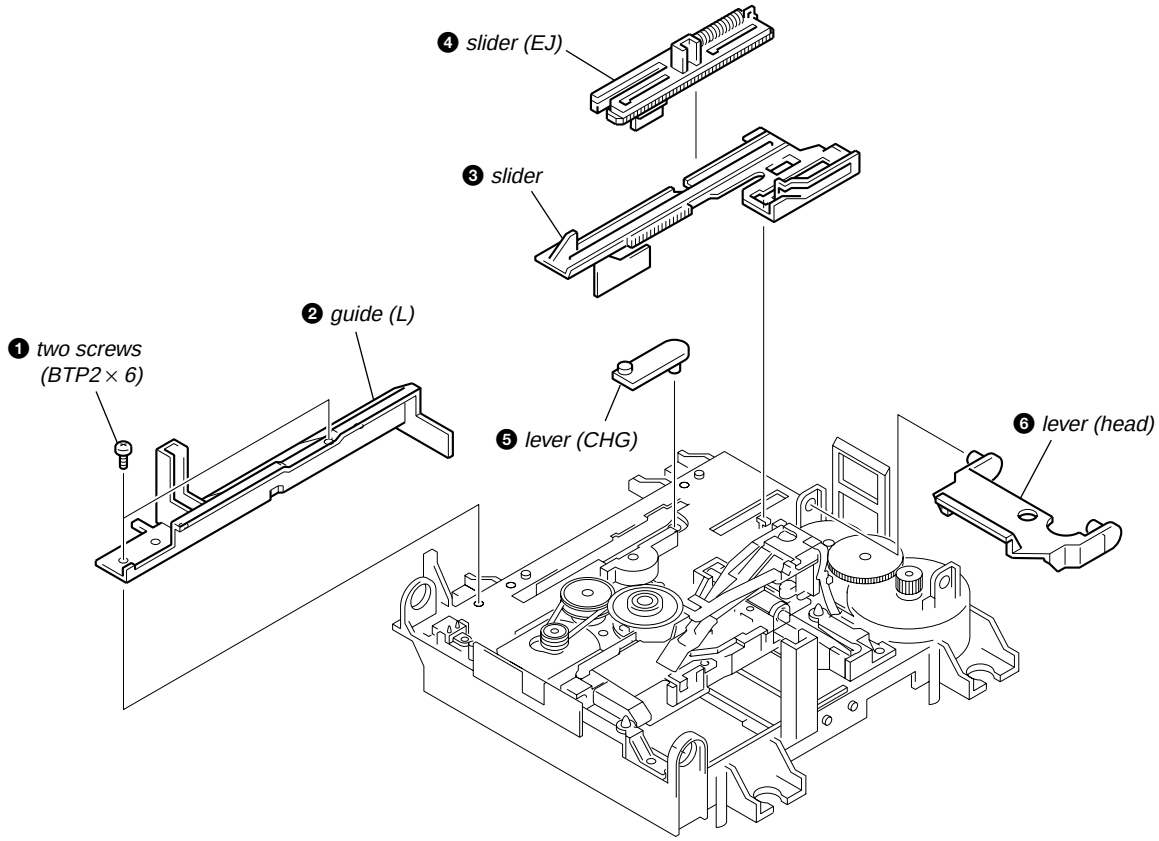
BD (MD) BOARD


❶ Remove the solder (four portions).
❸
❺ BD (MD) board
❶ Remove the solder (five portions).
❹ flexible board (CN101)
❷ two screws (BTP2 × 6)

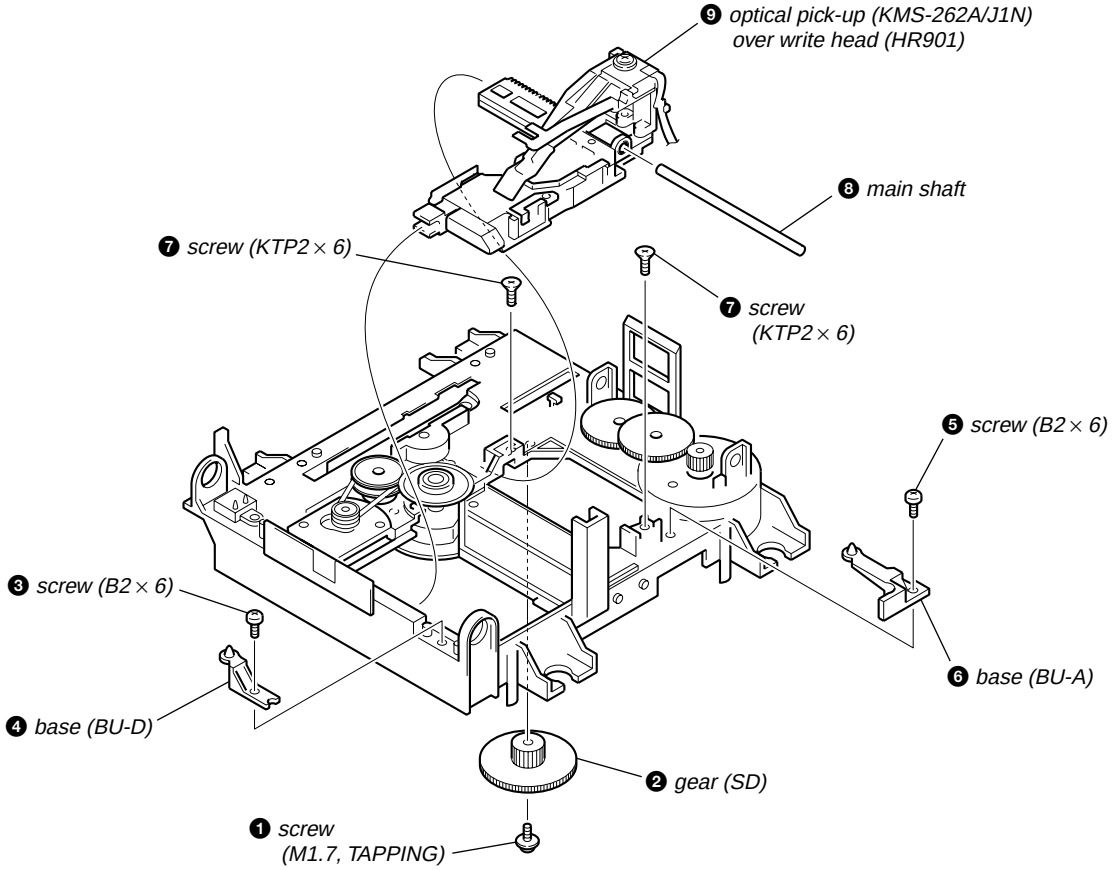
HOLDER ASSY



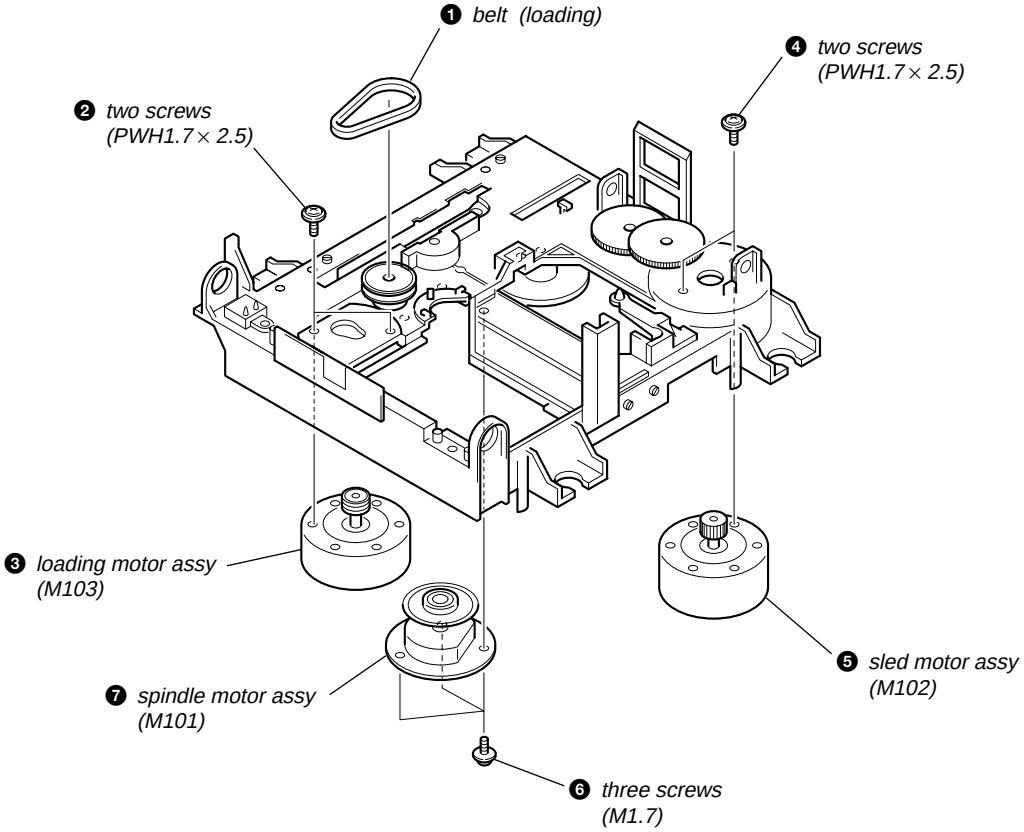
GUIDE (L), SLIDER (EJ), SLIDER, LEVER (HEAD)



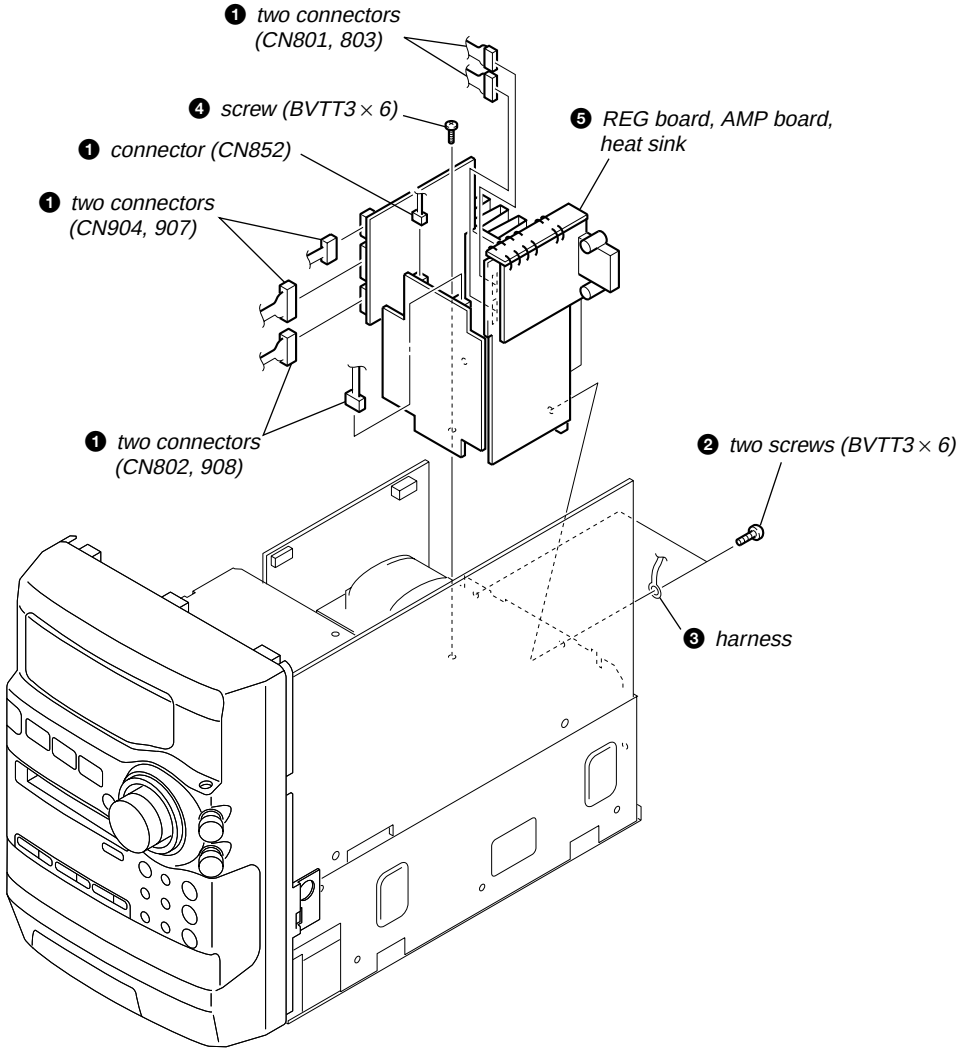
OPTICAL PICK-UP (KMS-262A/J1N), OVER WRITE HEAD (HR901)



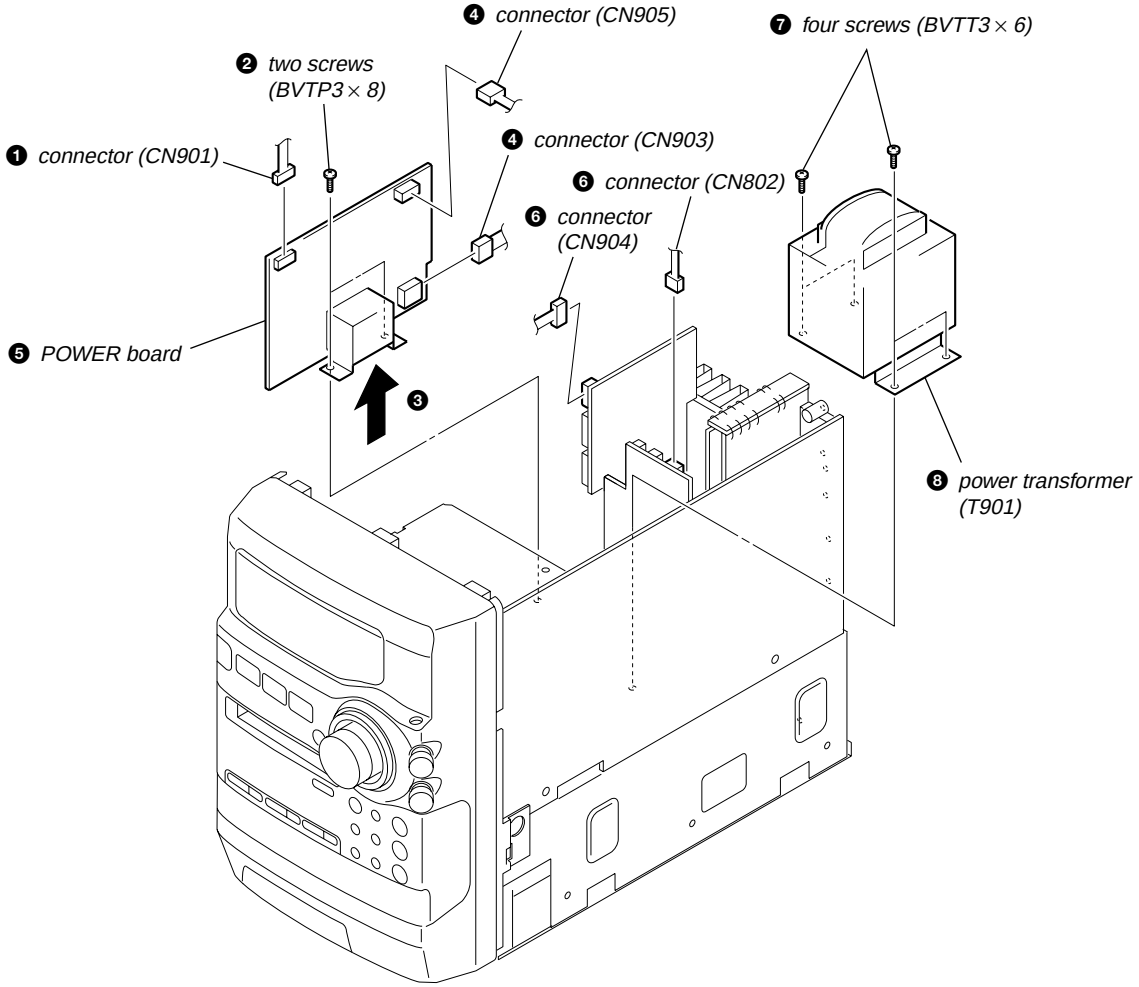
SPINDLE MOTOR ASSY (M101), SLED MOTOR ASSY (M102), LOADING MOTOR ASSY (M103)


❶ belt (loading)
❹ two screws (PWH1.7 × 2.5)
❷ two screws (PWH1.7 × 2.5)
❸ loading motor assy (M103)
❺ sled motor assy (M102)
❼ spindle motor assy (M101)
❻ three screws (M1.7)

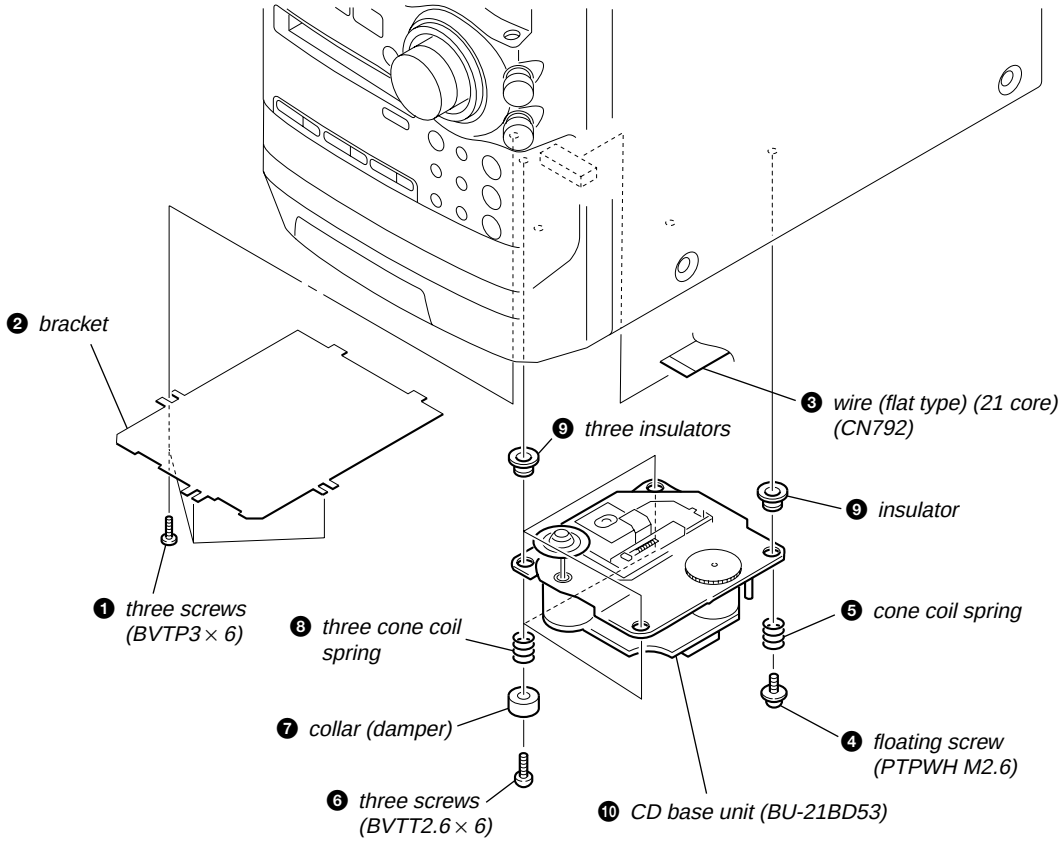
REG BOARD, AMP BOARD, HEAT SINK


❶ two connectors (CN801, 803)
❹ screw (BVTT3 × 6)
❺ REG board, AMP board, heat sink
❶ connector (CN852)
❶ two connectors (CN904, 907)
❶ two connectors (CN802, 908)
❷ two screws (BVTT3 × 6)
❸ harness

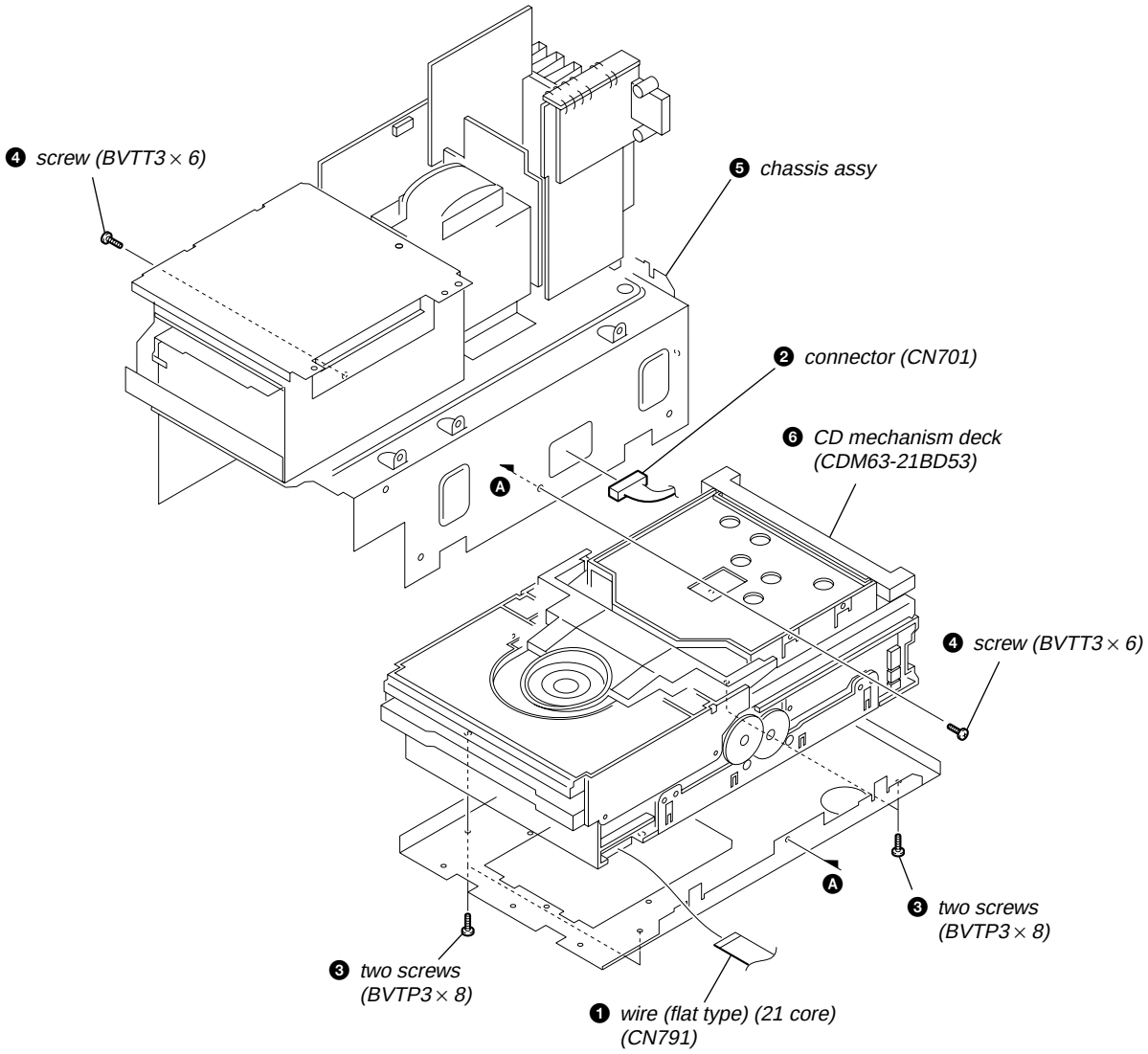
POWER BOARD, POWER TRANSFORMER (T901)



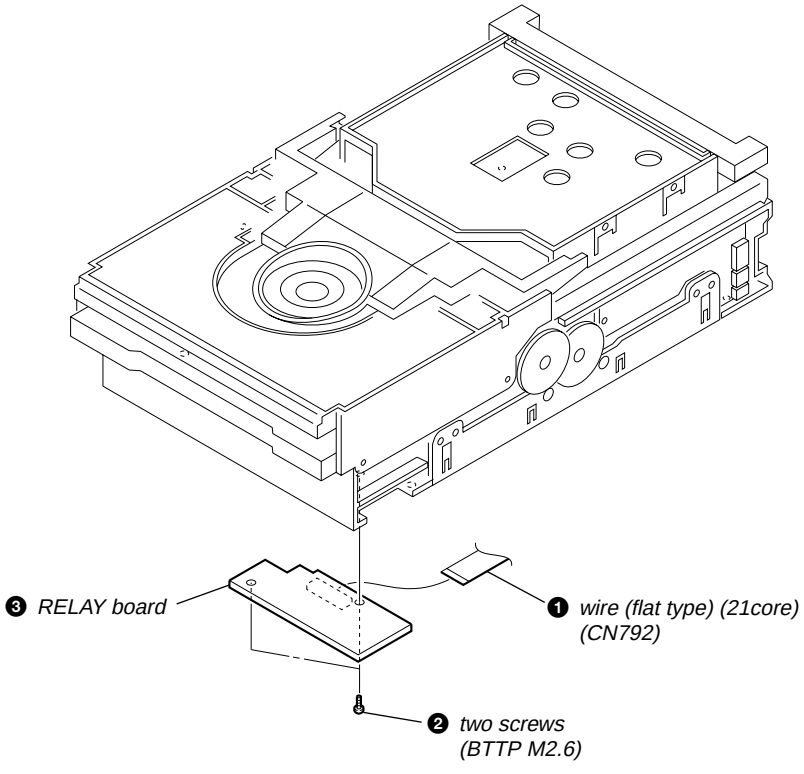
CD BASE UNIT (BU-21BD53)


❷ bracket
❸ wire (flat type) (21 core) (CN792)
❾ three insulators
❾ insulator
❶ three screws (BVTP3 × 6)
❽ three cone coil spring
❺ cone coil spring
❼ collar (damper)
❹ floating screw (PTPWH M2.6)
❻ three screws (BVTT2.6 × 6)
❿ CD base unit (BU-21BD53)

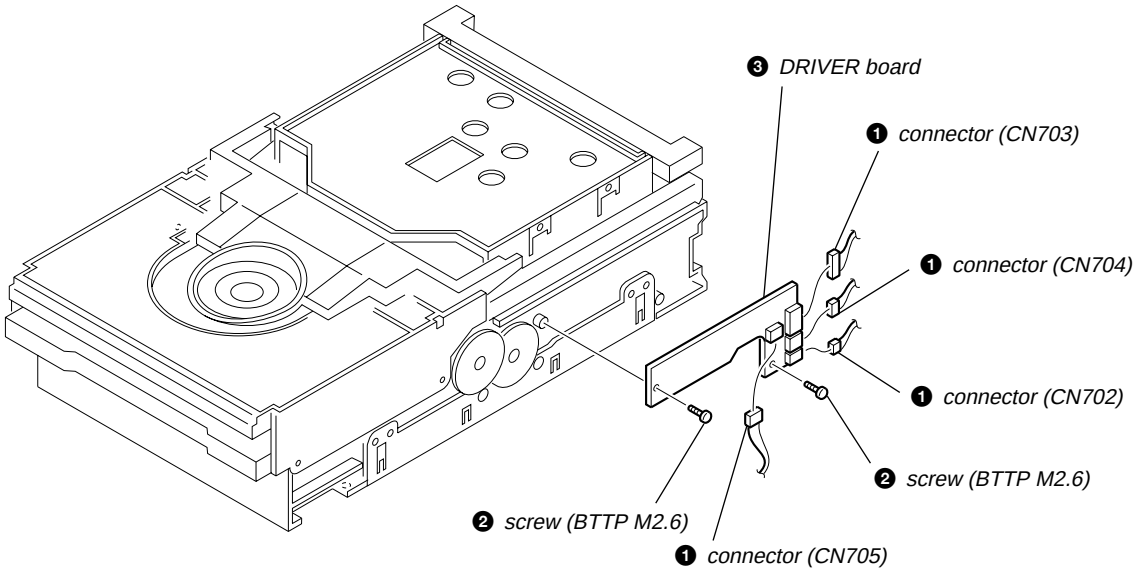
CD MECHANISM DECK (CDM63-21BD53)


❹ screw (BVTT3 × 6)
❺ chassis assy
❷ connector (CN701)
❻ CD mechanism deck (CDM63-21BD53)
Ⓐ
❹ screw (BVTT3 × 6)
Ⓐ
❸ two screws (BVTP3 × 8)
❸ two screws (BVTP3 × 8)
❶ wire (flat type) (21 core) (CN791)

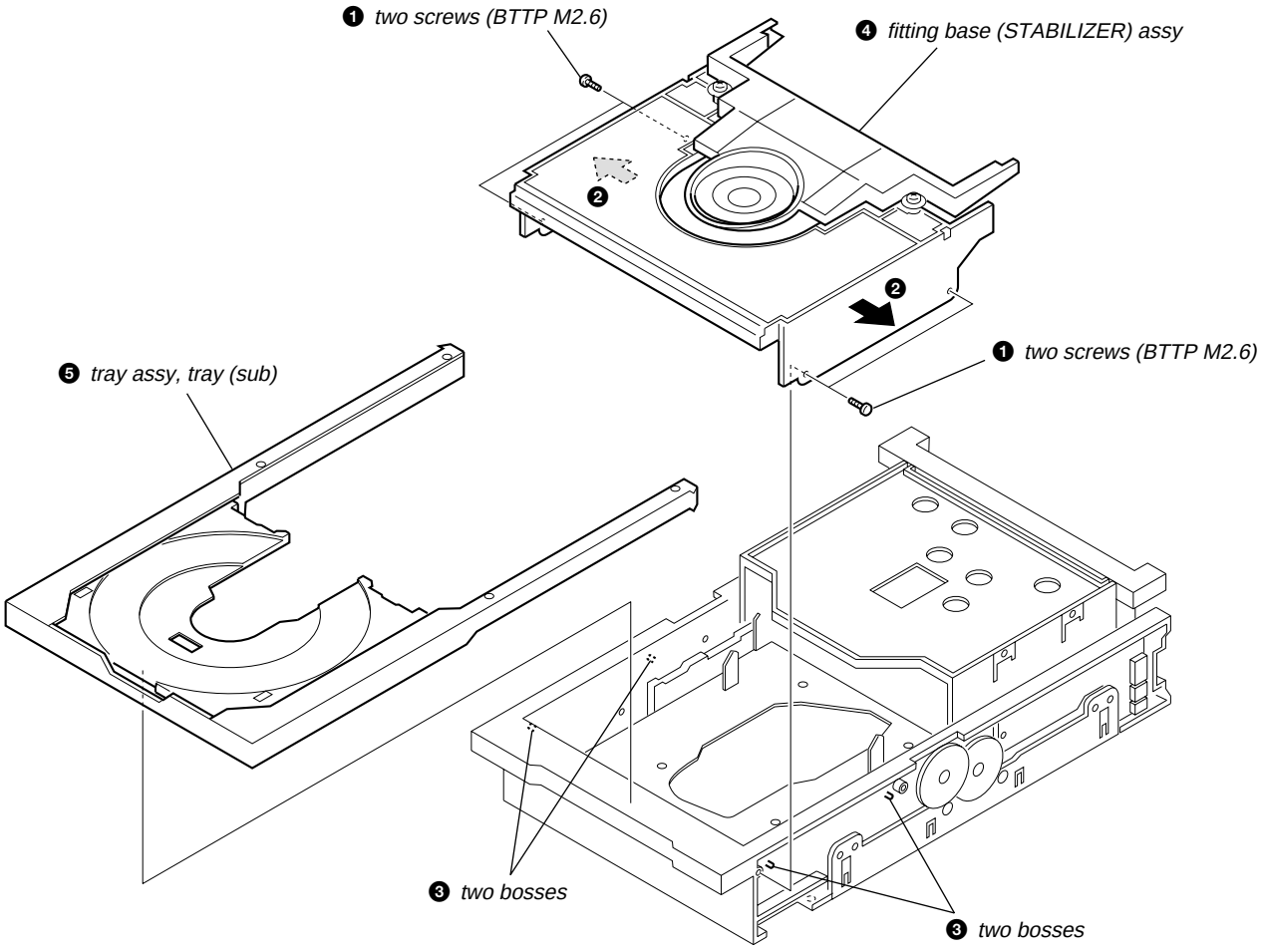
RELAY BOARD



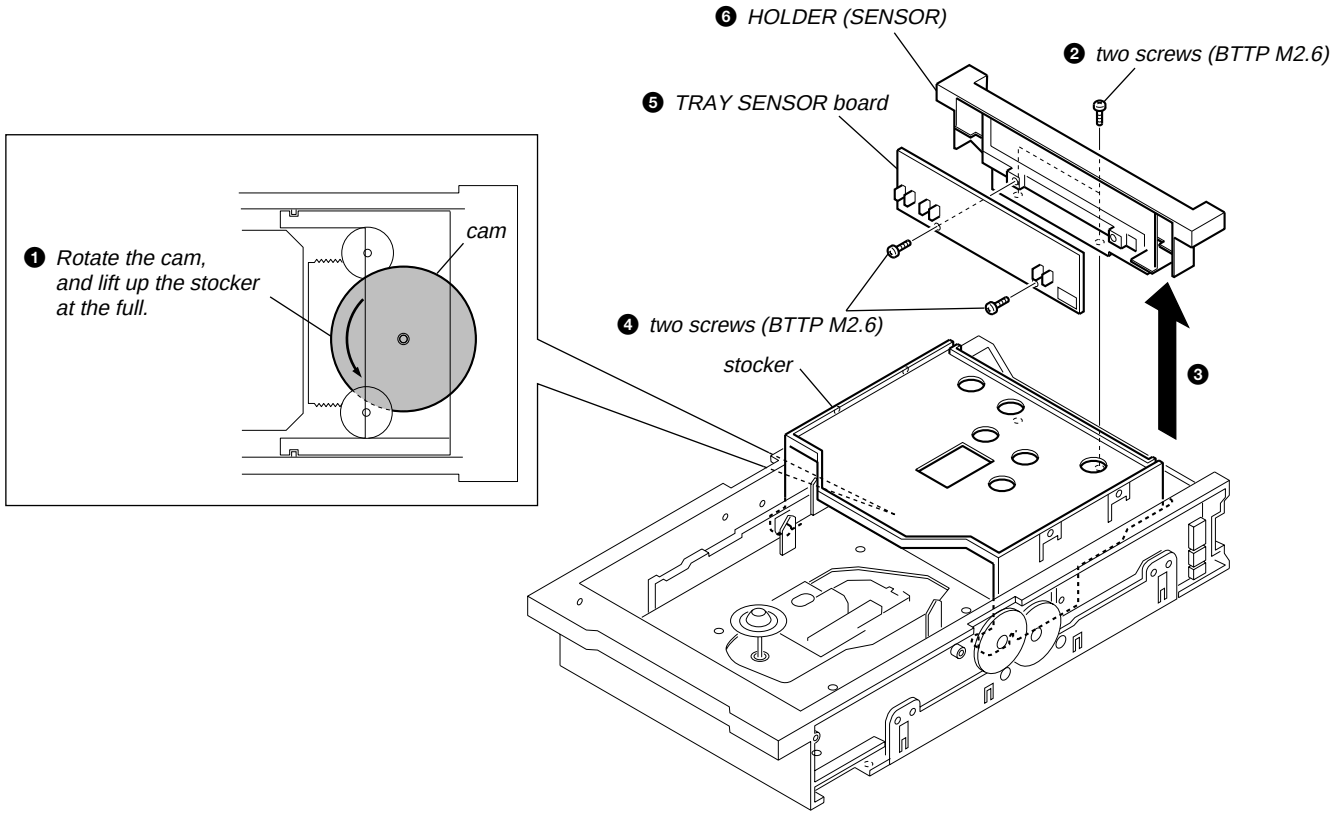
DRIVER BOARD



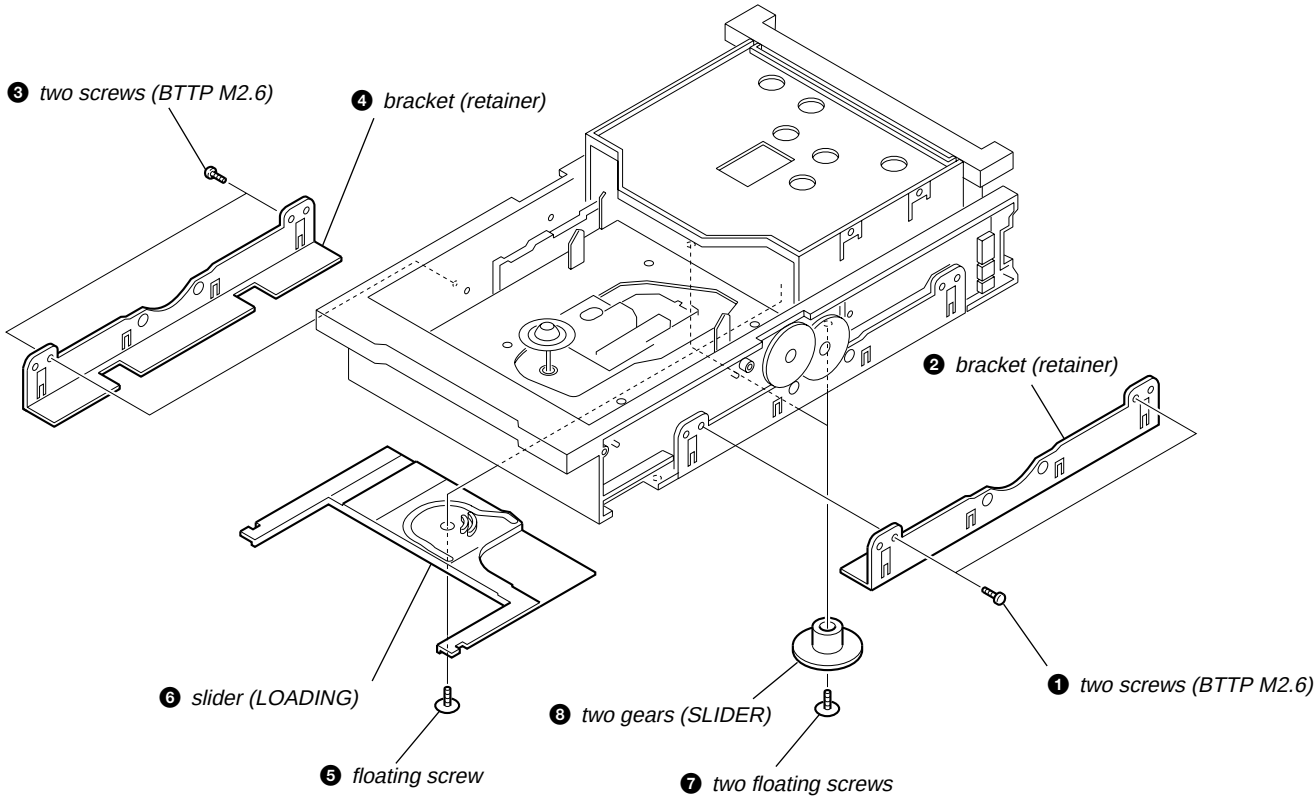
FITTING BASE (STABILIZER) ASSY, TRAY ASSY, TRAY (SUB)



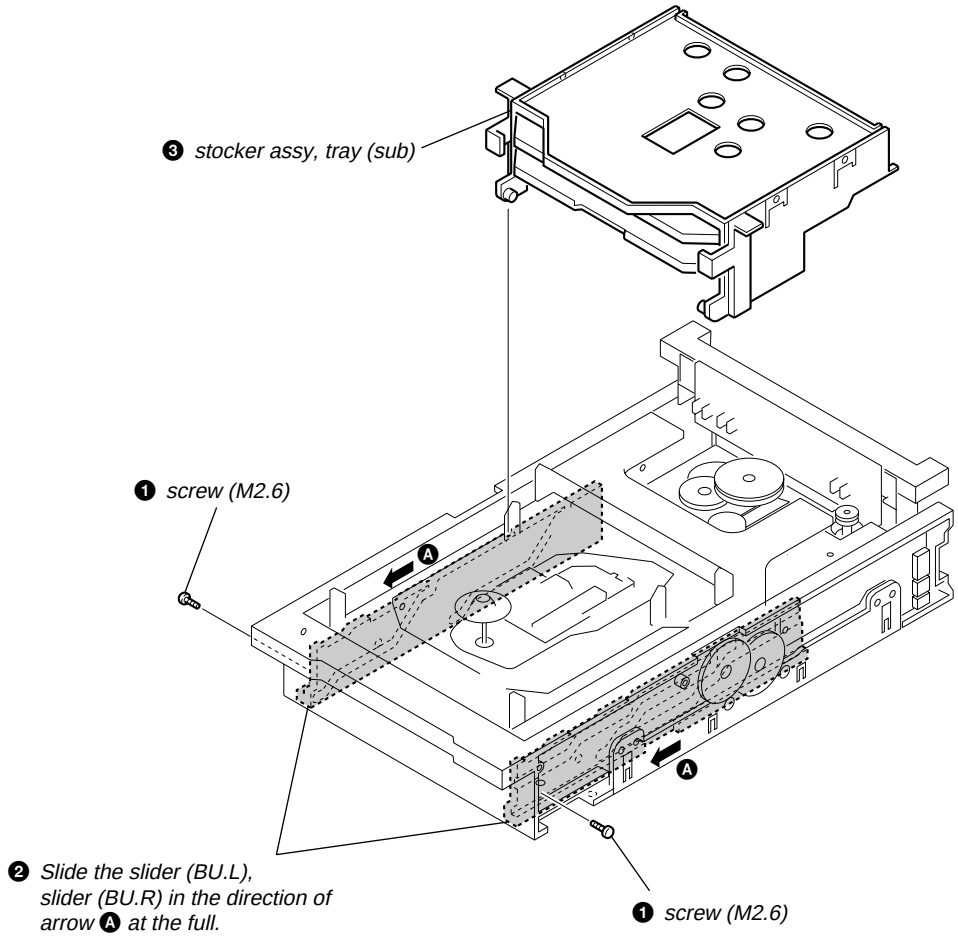
TRAY SENSOR BOARD



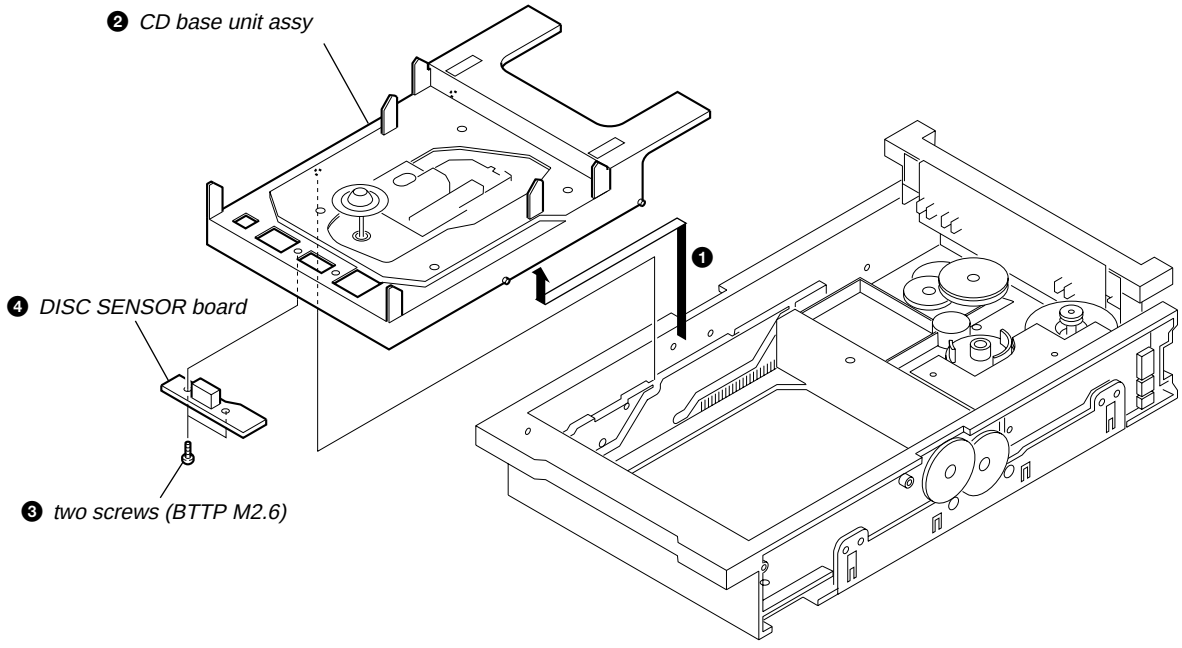
SLIDER (LOADING), GEAR (SLIDER)



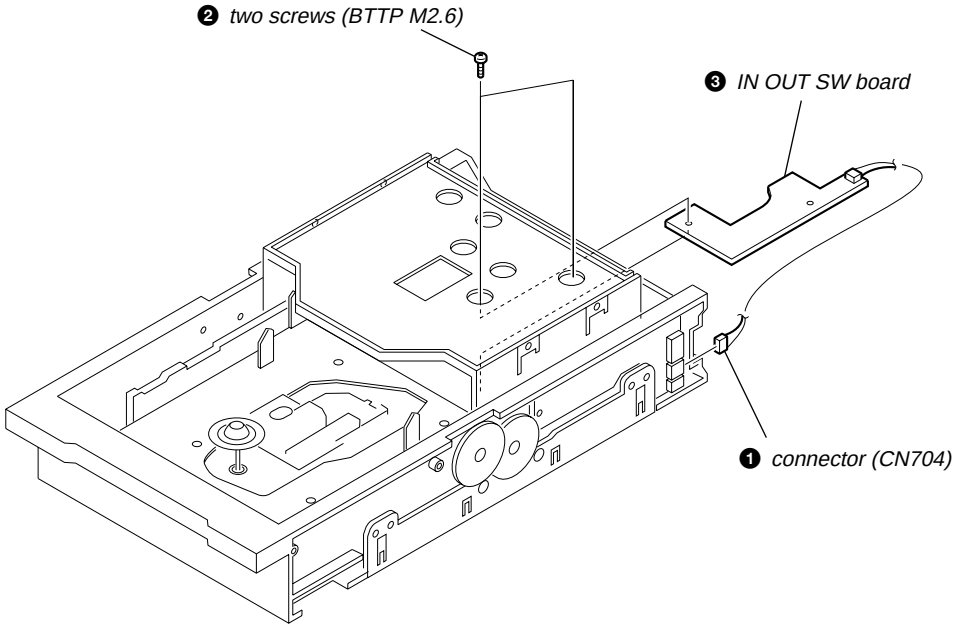
STOCKER ASSY, TRAY (SUB)



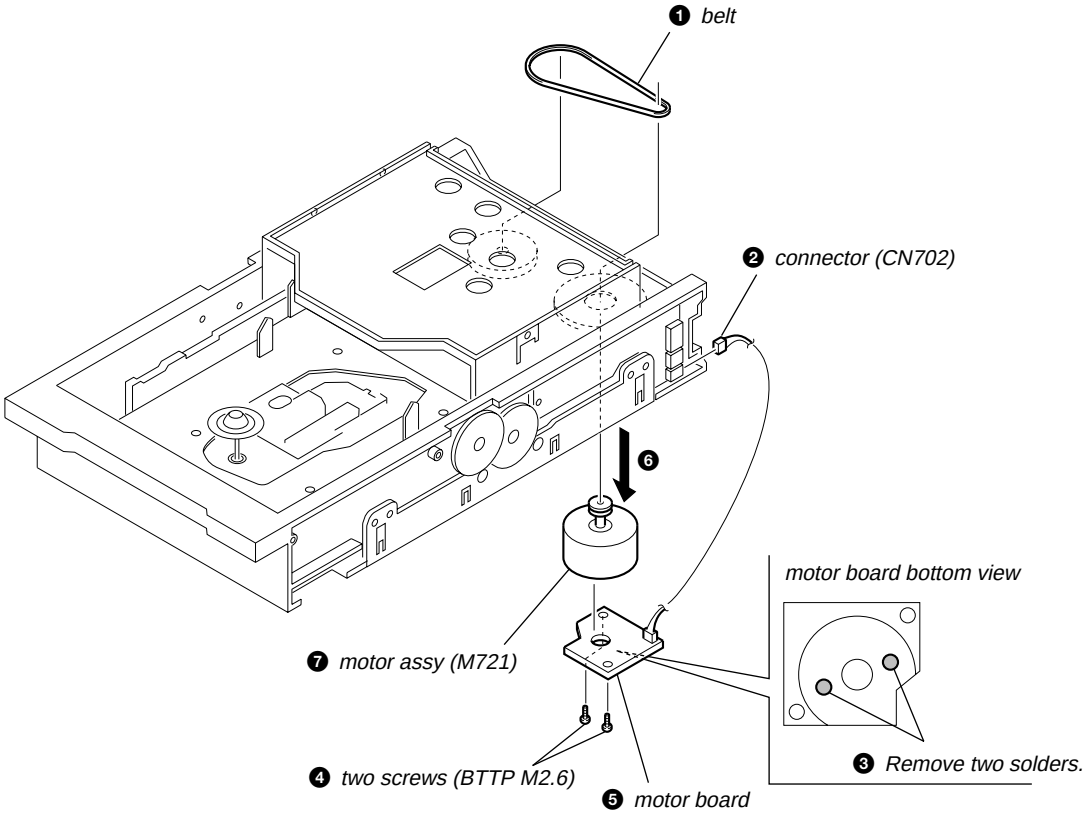
DISC SENSOR BOARD



IN OUT SW BOARD



MOTOR ASSY (M721), MOTOR BOARD



SECTION 4
TEST MODE

MD SECITON

4-1. PRECAUTIONS FOR USE OF TEST MODE

- As loading related operations will be performed regardless of the test mode operations being performed, be sure to check that the disc is stopped before setting and removing it.
  Even if the [MD ⏏] button is pressed while the disc is rotating during continuous playback, continuous recording, etc., the disc will not stop rotating.
  Therefore, it will be ejected while rotating.
  Be sure to press the [MD ⏏] button after pressing the [MENU/NO] button and the rotation of disc is stopped.

4-1-1. Recording laser emission mode and operating buttons

- Continuous recording mode (CREC 2MODE)
- Laser power check mode (LDPWR CHECK)
- Laser power adjustment mode (LDPWR ADJUST)
- Comparison with initial Iop value written in nonvolatile memory (Iop Compare)
- Write current Iop value in read nonvolatile memory using microprocessor (Iop NV Save)
- Traverse (MO) check (EF MO CHECK)
- Traverse (MO) adjustment (EF MO ADJUST)
- When pressing the [REC/REC IT] button.

4-2. SETTING THE TEST MODE

The following are two methods of entering the test mode.

Procedure 1: 1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to set the MD function.
3. Press three buttons of [■] , [MD ►II] and [⏏] (CD3) simultaneously.
When the test mode is set, "[Check]" will be displayed. Turning the [ENTER/YES] knob between the following three groups; ⋯ ⟷ [Check] ⟷ [Service] ⟷ [Develop] ⟷ ⋯:

Procedure 2: 1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to set the MD function.
3. Press three buttons of [■] , [MD ►II] and [⏏] (CD2) simultaneously.
When the test mode is set, "TEMP CHECK" (C12) will be displayed. By setting the test mode using this method, only the "Check" group of procedure1 can be executed.

Note: Do not use the test mode in the [Develop] group.
If used, the unit may not operate normally.
If the [Develop] group is set accidentally, press the [MENU/NO] button immediately to exit the [Develop] group.

4-3. RELEASING THE TEST MODE

Press the [REPEAT] button to display "Initialize", then release the MD test mode.

4-4. BASIC OPERATIONS OF THE TEST MODE

All operations are performed using the [ENTER/YES] knob/button and [MENU/NO] button.
The functions of knob and buttons are as follows.

Function name	Function
[ENTER/YES] knob	Changes parameters and modes
[ENTER/YES] button	Proceeds onto the next step. Finalizes input
[MENU/NO] button	Returns to previous step. Stops operations

4-5. SELECTING THE TEST MODE

There are 26 types of test modes as shown below. The groups can be switched by turning the [ENTER/YES] knob. After selecting the group to be used, press the [ENTER/YES] button. After setting a certain group, turning the [ENTER/YES] knob switches modes shown below. Refer to "Group" in the table for details can be selected.

All items used for servicing can be treated using group [Service]. So be carefully not to enter other groups by mistake.

Note: Do not use the test mode in the [Develop] group.
If used, the unit may not operate normally.
If the [Develop] group is set accidentally, press the [MENU/NO] button immediately to exit the [Develop] group.

Display	No.	Details	Mark	Group	
				Check	Service
AUTO CHECK	C01	Automatic self-diagnosis			◯
Err Display	C02	Error history display, clear			◯
TEMP ADJUST	C03	Temperature compensation offset adjustment			◯
LDPWR ADJUST	C04	Laser power adjustment			◯
Iop Write	C05	Iop data writing			◯
Iop NV Save	C06	Writes current Iop value in read nonvolatile memory using microprocessor			◯
EF MO ADJUST	C07	Traverse (MO) adjustment			◯
EF CD ADJUST	C08	Traverse (CD) adjustment			◯
FBIAS ADJUST	C09	Focus bias adjustment			◯
AG Set (MO)	C10	Auto gain output level adjustment (MO)			◯
AG Set (CD)	C11	Auto gain output level adjustment (CD)			◯
TEMP CHECK	C12	Temperature compensation offset check		◯	◯
LDPWR CHECK	C13	Laser power check		◯	◯
EF MO CHECK	C14	Traverse (MO) check		◯	◯
EF CD CHECK	C15	Traverse (CD) check		◯	◯
FBIAS CHECK	C16	Focus bias check		◯	◯
ScurveCHECK	C17	S-curve check	×	◯	
VERIFYMODE	C18	Nonvolatile memory check	×	◯	
DETRK CHECK	C19	Detrack check	×	◯	
0920 CHECK	C25	Most circumference check	×	◯	
Iop Read	C26	Iop data display		◯	◯
Iop Compare	C27	Comparison with initial Iop value written in nonvolatile memory		◯	◯
ADJ CLEAR	C28	Initialization of nonvolatile memory for adjustment values			◯
INFORMATION	C31	Display of microprocessor version, etc.		◯	◯
CPLAY2MODE	C36	Continuous playback mode		◯	◯
CREC 2MODE	C37	Continuous recording mode		◯	◯

- For details of each adjustment mode, refer to "5. Electrical Adjustments".
  For details of "Err Display", refer to "Self-Diagnosis Function" on page 2.
- If a different mode has been selected by mistake, press the [MENU/NO] button to release that mode.
- Modes with (×) in the Mark column are not used for servicing and therefore are not described in detail. If these modes are set accidentally, press the [MENU/NO] button to release the mode immediately.

4-5-1. Operating the Continuous Playback Mode

1. Entering the continuous playback mode

(1) Set the disc in the unit. (Whichever recordable discs or discs for playback only are available)
(2) Turn the [ENTER/YES] knob to display "CPLAY2MODE" (C36).
(3) Press the [ENTER/YES] button to change the display to "CPLAY2MID".
(4) When access completes, the display changes to "C = ▯▯▯▯ AD = ▯▯)".
Note: The numbers "▯" displayed show you error rates and ADER.

2. Changing the parts to be played back

(1) Press the [ENTER/YES] button during continuous playback to change the display as below.

"CPLAY2MID" → "CPLAY2OUT" → "CPLAY2IN"

When pressed another time, the parts to be played back can be moved.

(2) When access completes, the display changes to "C = ▯▯▯▯ AD = ▯▯)".
Note: The numbers "▯" displayed show you error rates and ADER.

3. Ending the continuous playback mode

(1) Press the [MENU/NO] button. The display will change to "CPLAY2MODE" (C36).
(2) Press the [MD ⏏] button and take out the disc.
Note: The playback start addresses for IN, MID, and OUT are as follows.
IN : 40h cluster
MID : 300h cluster
OUT : 700h cluster

4-5-2. Operating the Continuous Recording Mode (Use only when performing self-recording/palyback check)

1. Entering the continuous recording mode

(1) Set a recordable disc in the unit.
(2) Turn the [ENTER/YES] knob to display "CREC 2MODE" (C37).
(3) Press the [ENTER/YES] button to change the display to "CREC 2MID".
(4) When access completes, the display changes to "CREC 2(▯▯▯▯" and "**REC**" lights up.
Note: The numbers "▯" displayed shows you the recording position addresses.

2. Changing the parts to be recorded

(1) When the [ENTER/YES] button is pressed during continuous recording, the display changes as below.

"CREC 2MID" → "CREC 2OUT" → "CREC 2IN"

When pressed another time, the parts to be recorded can be changed. "**REC**" goes off.

(2) When access completes, the display changes to "CREC 2(▯▯▯▯" and "**REC**" lights up.
Note: The numbers "▯" displayed shows you the recording position addresses.

3. Ending the continuous recording mode

(1) Press the [MENU/NO] button. The display changes to "CREC 2MODE" (C37) and "**REC**" goes off.
(2) Press the [MD ⏏] button and take out the disc.
Note 1: The recording start addresses for IN, MID, and OUT are as follows.
IN : 40h cluster
MID : 300h cluster
OUT : 700h cluster
Note 2: The [MENU/NO] button can be used to stop recording anytime.
Note 3: Do not perform continuous recording for long periods of time above 5 minutes.
Note 4: During continuous recording, be careful not to apply vibration.

4-6. FUNCTIONS OF OTHER BUTTONS

Function	Contents
MD ► II	Sets continuous playback when pressed in the STOP state. When pressed during continuous playback, the tracking servo turns ON/OFF
■	Stops continuous playback and continuous recording
►► of CURSOR knob	The sled moves to the outer circumference only when this is pressed
◄◄ of CURSOR knob	The sled moves to the inner circumference only when this is pressed
CD SYNC HIGH SPEED	Switches between the pit and groove modes when pressed
PLAY MODE	Switches the spindle servo mode (CLV S ⟷ CLV A)
CD SYNC HIGH SPEED (*1)	Switches the displayed contents each time the button is pressed
MD ⏏	Ejects the disc
REPEAT	Releases the test mode

*1) Press the [CD SYNC NORM SPEED] button to lights up "IT" indicator, then press the [CD SYNC HIGH SPEED] button.

4-7. TEST MODE DISPLAYS

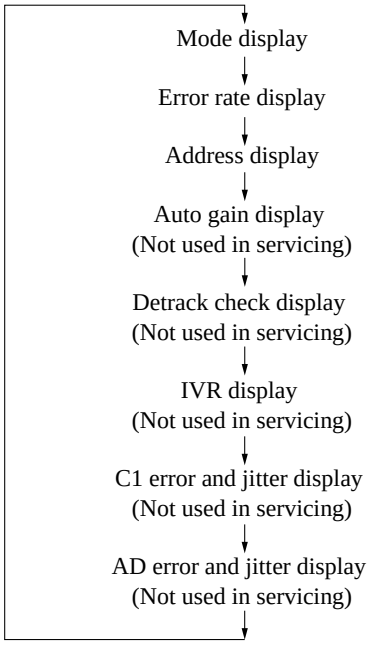
Each time the CD SYNC HIGH SPEED button is pressed, the display changes in the following order.
When CPLAY or CREC are started, the display will forcibly be switched to the error rate display as the initial mode.

1. Mode display
Displays “TEMP ADJUST” (C03), “CPLAY2MODE” (C36), etc.

2. Error rate display
Displays the error rate in the following way.
C = ⬚⬚⬚ AD = ⬚⬚)
C = : Indicates the C1 error.
AD = : Indicates ADER.

3. Address display
The address is displayed as follows. (MO: recordable disc, CD: playback only disc)
h = ⬚⬚⬚ s = ⬚⬚⬚ (MO pit and CD)
h = ⬚⬚⬚ a = ⬚⬚⬚ (MO groove)
h = : Indicates the header address.
s = : Indicates the SUBQ address.
a = : Indicates the ADIP address.

Note: “–” is displayed when servo is not imposed.



MEANINGS OF OTHER DISPLAYS

Display	Contents	
	When Lit	When Off
LP2	Servo ON	Servo OFF
4	Tracking servo OFF	Tracking servo ON
REC	Recording mode ON	Recording mode OFF
SYNC, TRACK	CLV low speed mode	CLV normal mode
L-SYNC	ABCD adjustment completed	
PROGRAM, OVER	Tracking offset cancel ON	Tracking offset cancel OFF
TOC	Tracking auto gain OK	
REPEAT	Focus auto gain OK	
S.F EDIT	Pit	Groove
DISC	High reflection	Low reflection
NORMAL SPEED	CLV S	CLV A
MONO	CLV LOCK	CLV UNLOCK

4-8. AUTOMATIC SELF-DIAGNOSIS FUNCTION

This test mode performs CREC and CPLAY automatically for mainly checking the characteristics of the optical pick-up.
To perform this test mode, the laser power must first be checked.
Perform AUTO CHECK after the laser power check and Iop Compare.

Procedure:

1. Turn the [ENTER/YES] knob to display "AUTO CHECK" (C01).
2. Press the [ENTER/YES] button. If "LDPWR ミチェック " is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop Compare, and then repeat from enter the MD test mode.
3. If a disc is in the mechanical deck, it will be ejected forcibly.
   "DISC IN" will be displayed in this case. Load a test disc (MDW-74/GA-1) which can be recorded.
4. If a disc is loaded at step 3, the check will start automatically.
5. When "XX CHECK" is displayed, the item corresponding to XX will be performed.
   When "06 CHECK" completes, the disc loaded at step 3 will be ejected. "DISC IN" will be displayed. Load the check disc (TDYS-1).
6. When the disc is loaded in step 5, the check will automatically be resumed from "07 CHECK".
7. After completing to test item 12, check OK or NG will be displayed. If all items are OK, "CHECK ALL OK" will be displayed. If any item is NG, it will be displayed as "NG:xxxx".

When "CHECK ALL OK" is displayed, it means that the optical pick-up is normal. Check the operations of other parts (spindle motor, sled motor, etc.).
When displayed as "NG:xxxx", it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

4-9. INFORMATION

Display the software version.

Procedure:

1. Turn the [ENTER/YES] knob to display "INFORMATION" (C31).
2. Press the [ENTER/YES] button.
3. The software version will be displayed.
4. Press the [MENU/NO] button to end this mode.

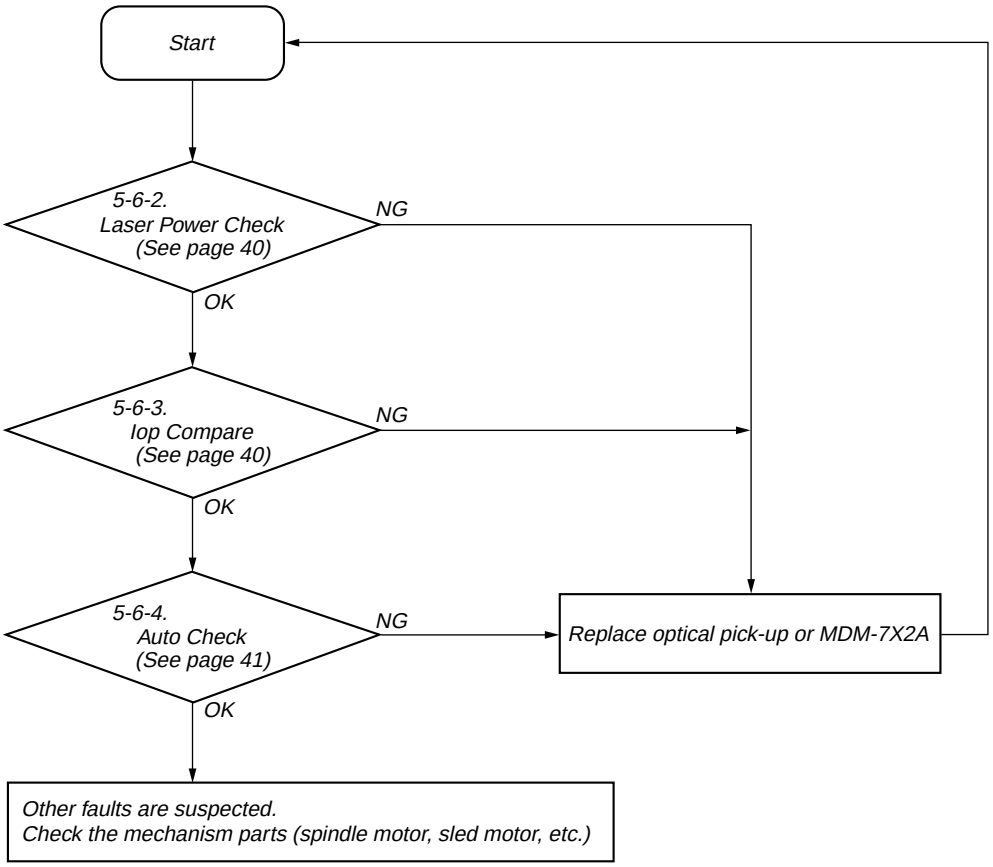
SECTION 5
ELECTRICAL ADJUSTMENTS

MD SECTION

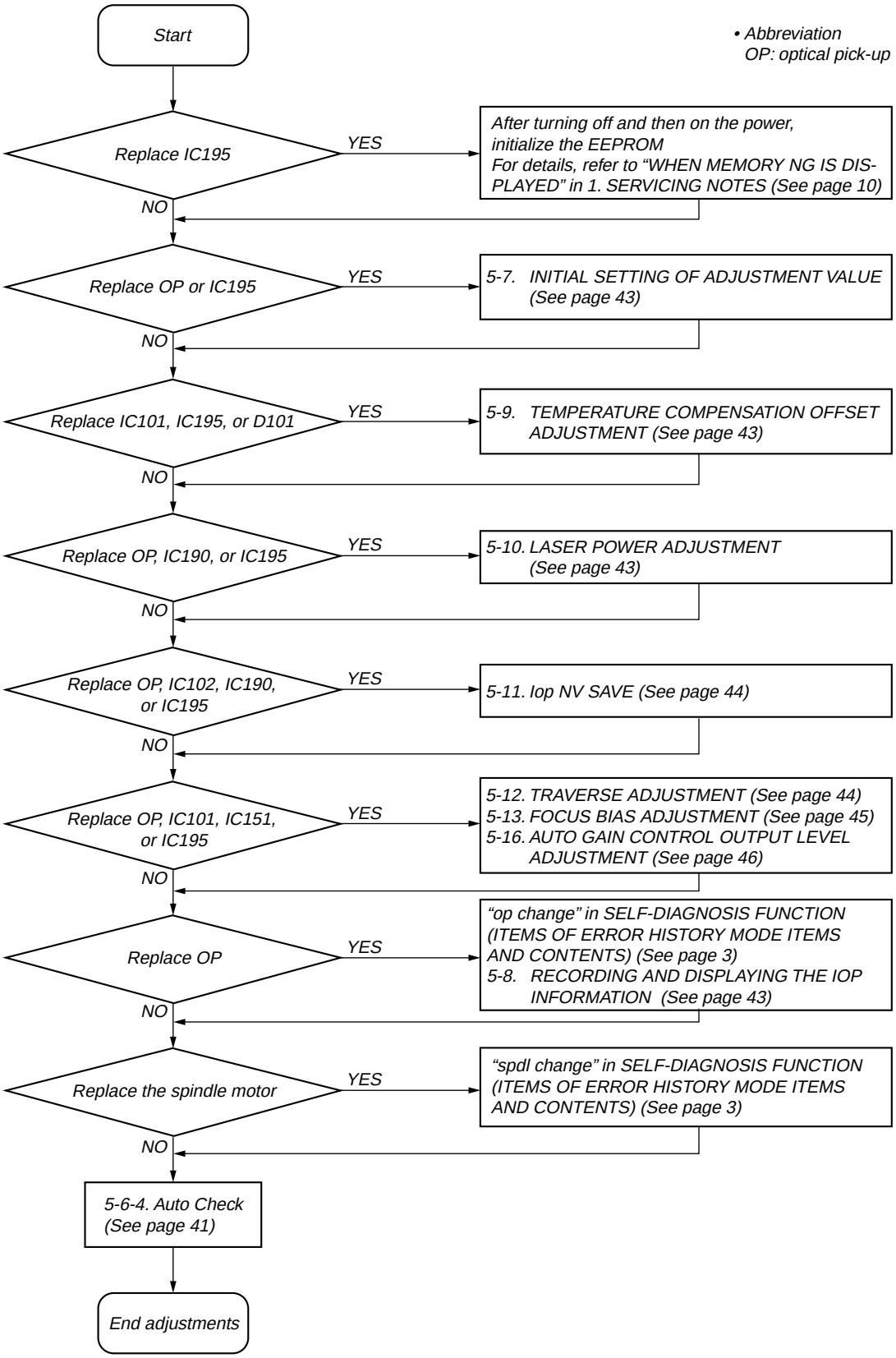
5-1. PARTS REPLACEMENT AND ADJUSTMENTS

If malfunctions caused by optical pick-up such as sound skipping are suspected, follow the following check.

Check before replacement



Adjustment flow

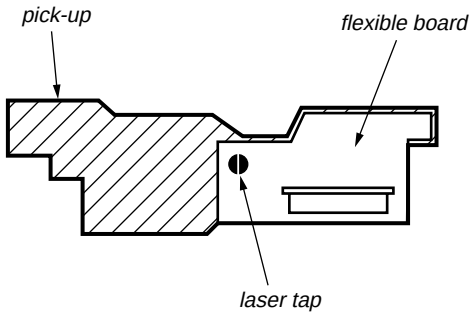

Start
• Abbreviation
OP: optical pick-up
Replace IC195
YES
After turning off and then on the power, initialize the EEPROM
For details, refer to "WHEN MEMORY NG IS DISPLAYED" in 1. SERVICING NOTES (See page 10)
NO
Replace OP or IC195
YES
5-7. INITIAL SETTING OF ADJUSTMENT VALUE (See page 43)
NO
Replace IC101, IC195, or D101
YES
5-9. TEMPERATURE COMPENSATION OFFSET ADJUSTMENT (See page 43)
NO
Replace OP, IC190, or IC195
YES
5-10. LASER POWER ADJUSTMENT (See page 43)
NO
Replace OP, IC102, IC190, or IC195
YES
5-11. Iop NV SAVE (See page 44)
NO
Replace OP, IC101, IC151, or IC195
YES
5-12. TRAVERSE ADJUSTMENT (See page 44)
5-13. FOCUS BIAS ADJUSTMENT (See page 45)
5-16. AUTO GAIN CONTROL OUTPUT LEVEL ADJUSTMENT (See page 46)
NO
Replace OP
YES
"op change" in SELF-DIAGNOSIS FUNCTION (ITEMS OF ERROR HISTORY MODE ITEMS AND CONTENTS) (See page 3)
5-8. RECORDING AND DISPLAYING THE IOP INFORMATION (See page 43)
NO
Replace the spindle motor
YES
"spdl change" in SELF-DIAGNOSIS FUNCTION (ITEMS OF ERROR HISTORY MODE ITEMS AND CONTENTS) (See page 3)
NO
5-6-4. Auto Check (See page 41)
End adjustments

5-2. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION

To check the emission of the laser diode during adjustments, never view directly from the top as this may lose your eye-sight.

5-3. PRECAUTIONS FOR USE OF OPTICAL PICK-UP (KMS-262A)

As the laser diode in the optical pick-up is easily damaged by static electricity, solder the laser tap of the flexible board when using it. Before disconnecting the connector, desolder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



Optical pick-up flexible board

5-4. PRECAUTIONS FOR ADJUSTMENTS

1. When replacing the following parts, perform the adjustments and checks with ◯ in the order shown in the following table.
2. Set the MD test mode when performing adjustments.
   After completing the adjustments, exit the MD test mode.
   Perform the adjustments and checks in "Group Service" of the MD test mode.
3. Perform the adjustments to be needed in the order shown.
4. Use the following tools and measuring devices.
   - Check Disc (TDYS-1) (Part No. : 4-963-646-01)
   - Test Disk (MDW-74/GA-1) (Part No. : 4-229-747-01)
   - Laser power meter LPM-8001 (Part No. : J-2501-046-A)
     or
     MD Laser power meter 8010S (Part No. : J-2501-145-A)*1
   - Oscilloscope (Measure after performing CAL of prove.)
   - Digital voltmeter
   - Thermometer
   - Jig for checking BD (MD) board waveform
     (Part No. : J-2501-196-A)
5. When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope.
   (VC and ground will become short-circuited)
6. Using the above jig enables the waveform to be checked without the need to solder.
   (Refer to Servicing Notes on page 9)
7. As the disc used will affect the adjustment results, make sure that no dusts nor fingerprints are attached to it.

*1 **Laser power meter**

When performing laser power checks and adjustment (electrical adjustment), use of the new MD laser power meter 8010S (Part No. J-2501-145-A) instead of the conventional laser power meter is convenient.

It sharply reduces the time and trouble to set the laser power meter sensor onto the objective lens of optical pick-up.

Adjustment	Parts to be replaced						
	Optical Pick-up	IC101	IC102	IC151	IC190	IC195	D101
5-7. Initial setting of adjustment value	◯	×	×	×	×	◯	×
5-8. Recording of Iop information	◯	×	×	×	×	◯	×
5-9. Temperature compensation offset adjustment	×	◯	×	×	×	◯	◯
5-10. Laser power adjustment	◯	×	×	×	◯	◯	×
5-11. Iop NV Save	◯	×	◯	×	◯	◯	×
5-12. Traverse adjustment	◯	◯	×	◯	×	◯	×
5-13. Focus bias adjustment	◯	◯	×	◯	×	◯	×
5-16. Auto gain adjustment	◯	◯	×	◯	×	◯	×
5-6-4. Auto Check	◯	◯	×	◯	◯	◯	×

5-5. USING THE CONTINUOUSLY RECORDED DISC

* This disc is used in focus bias adjustment and error rate check. The following describes how to create a continuous recording disc.

1. Insert a disc (blank disc) commercially available.
2. Turn the [ENTER/YES] knob to display "CREC 2MODE" (C37).
3. Press the [ENTER/YES] button to display "CREC 2 MID". Display "CREC 2(0300" and start to recording.
4. Complete recording within 5 minutes.
5. Press the [MENU/NO] button and stop recording .
6. Press the [MD ⏏] button and remove the disc.

The above has been how to create a continuous recorded data for the focus bias adjustment and error rate check.

Note: Be careful not to apply vibration during continuous recording.

5-6. CHECKS PRIOR TO REPAIRS

These checks are performed before replacing parts according to "approximate specifications" to determine the faulty locations. For details, refer to "5-1. Parts Replacement and Adjustments" (see page 37).

5-6-1. Temperature Compensation Offset Check

When performing adjustments, set the internal temperature and room temperature to 22 to 28ºC.

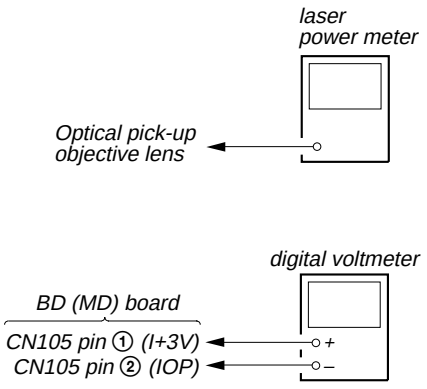
Procedure:

1. Turn the [ENTER/YES] knob to display "TEMP CHECK" (C12).
2. Press the [ENTER/YES] button.
3. "T=@@(##) [OK]" should be displayed. If "T=@@ (##) [NG]" is displayed, it means that the results are bad.
   (@@ indicates the current value set, and ## indicates the value written in the non-volatile memory.)

5-6-2. Laser Power Check

Before checking, check the Iop value of the optical pick-up. (Refer to 5-8. Recording and Displaying the Iop Information (see page 43)

Connection:



Procedure:

1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, turn the [CURSOR ◀◀ ▬▬ ▶▶] knob to move the optical pick-up.)
   Connect the digital volt meter to CN105 pin ① (I+3V) and CN105 pin ② (IOP).
2. Then, turn the [ENTER/YES] knob to display "LDPWR CHECK" (C13).
3. Press the [ENTER/YES] button once to display "LD 0.9mW$". Check that the reading of the laser power meter become 0.84 to 0.92 mW.
4. Press the [ENTER/YES] button once more to display " LD 7.0mW$". Check that the reading the laser power meter and digital volt meter satisfy the specified value.

Specified Value:

Laser power meter reading : 7.0 ± 0.2 mW
Digital voltmeter reading : Optical pick-up displayed value ± 10%

(Optical pick-up label)

KMS262A
20101
B0825

For details of the method for checking this value, refer to "5-8. Recording and Displaying the Iop Information"

IOP=82.5 mA in this case
IOP (mA) = Digital voltmeter reading (mV)/1 (Ω)

5. Press the [MENU/NO] button to display "LDPWR CHECK" (C13) and stop the laser emission.
   (The [MENU/NO] button is effective at all times to stop the laser emission.)

Note: After step 4, each time the [ENTER/YES] button is pressed, the display will be switched between "LD 0.7W$", "LD 7.5mW$", and "LD Wpホセイ$ ". Nothing needs to be performed here.

Checking Location: BD (MD) board (see page 47)

5-6-3. Iop Compare

The current Iop value at laser power 7.0 mW output and reference Iop value (set at shipment) written in the nonvolatile memory are compared, and the rate of increase/decrease will be displayed in percentage.

Note: Perform this function with the optical pick-up set at room temperature.

Procedure:

1. Turn the [ENTER/YES] knob to display "Iop Compare" (C27).
2. Press the [ENTER/YES] button and start measurements.
3. When measurements complete, the display changes to "± xx% yy".
   xx is the percentage of increase/decrease, and OK or NG is displayed at yy to indicate whether the percentage of increase/decrease is within the allowable range.
4. Press the [MENU/NO] button to end.

5-6-4. Auto Check

This test mode performs CREC and CPLAY automatically for mainly checking the characteristics of the optical pick-up. To perform this test mode, the laser power must first be checked. Perform Auto Check after the laser power check and Iop compare.

Procedure:

1. Turn the [ENTER/YES] knob to display "AUTO CHECK" (C01).
2. Press the [ENTER/YES] button. If "LDPWR ミチェック" is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop Compare, and then repeat from enter the MD test mode.
3. If a disc is in the mechanical deck, it will be ejected forcibly. "DISC IN" will be displayed in this case. Load a test disc (MDW-74/GA-1) which can be recorded.
4. If a disc is loaded at step 3, the check will start automatically.
5. When "XX CHECK" is displayed, the item corresponding to XX will be performed.
   When "06 CHECK" completes, the disc loaded at step 3 will be ejected. "DISC IN" will be displayed. Load the check disc (TDYS-1).
6. When the disc is loaded in the step 5, the check will automatically be resumed from "07 CHECK".
7. After completing to test item 12, check OK or NG will be displayed. If all items are OK, "CHECK ALL OK" will be displayed. If any item is NG, it will be displayed as "NG: xxxx".

When "CHECK ALL OK" is displayed, it means that the optical pick-up is normal. Check the operations of other parts (spindle motor, sled motor, etc.).
When displayed as "NG: xxxx", it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

5-6-5. Other Checks

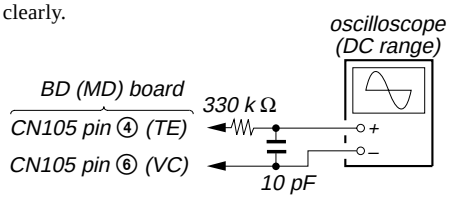
All the following checks are performed by the Auto Check mode. They therefore need not be performed in normal operation.

5-6-6. Traverse Check
5-6-7. Focus Bias Check
5-6-8. C PLAY Check
5-6-9. Self-Recording/Playback Check

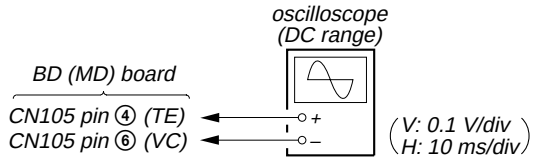
5-6-6. Traverse Check

Note 1: Data will be erased during MO reading if a recorded disc is used in this adjustment.

Note 2: If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



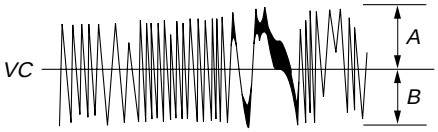
Connection:



Procedure:

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) on the BD (MD) board.
2. Load a disc (any available on the market). (Refer to Note 1)
3. Turn the [CURSOR ◀◀ ▬▬ ▶▶] knob to move the optical pick-up outside the pit.
4. Turn the [ENTER/YES] knob to display "EF MO CHECK" (C14).
5. Press the [ENTER/YES] button to display "EFB = ⬚ MO-R". (Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not turn the [ENTER/YES] knob.
   (Read power traverse checking)

Traverse Waveform

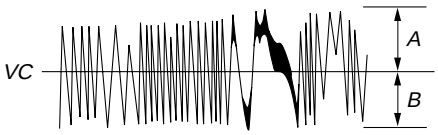


Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2\,(A + B)} \times 100$$

7. Press the [ENTER/YES] button to display "EFB = ⬚ MO-W".
8. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not turn the [ENTER/YES] knob.
   (Write power traverse checking)

Traverse Waveform

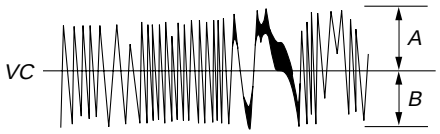


Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2\,(A + B)} \times 100$$

9. Press the [ENTER/YES] button to display "EFB = □□ MO-P". Then, the optical pick-up moves to the pit area automatically and servo is imposed.
10. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not turn the [ENTER/YES] knob.

Traverse Waveform

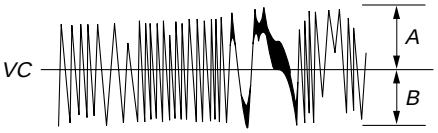


Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2\,(A + B)} \times 100$$

11. Press the [ENTER/YES] button to display "EF MO CHECK" (C14).
    The disc stops rotating automatically.
12. Press the [MD ⏏] button and take out the disc.
13. Load the check disc (TDYS-1).
14. Turn the [ENTER/YES] knob to display "EF CD CHECK" (C15).
15. Press the [ENTER/YES] button to display "EFB = □□ CD". Servo is imposed automatically.
16. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not turn the [ENTER/YES] knob.

Traverse Waveform



Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2\,(A + B)} \times 100$$

17. Press the [ENTER/YES] button to display "EF CD CHECK" (C15).
18. Press the [MD ⏏] button and take out the check disc.

Checking Location: BD (MD) board (see page 47)

5-6-7. Focus Bias Check

Change the focus bias and check the focus tolerance amount.

Procedure:

1. Load the test disc (MDW-74/GA-1).
2. Turn the [ENTER/YES] knob to display "CPLAY2MODE" (C36).
3. Press the [ENTER/YES] button to display "CPLAY2MID".
4. Press the [MENU/NO] button when "C = □□□□ AD = □□)" is displayed.
5. Turn the [ENTER/YES] knob to display "FBIAS CHECK" (C16).
6. Press the [ENTER/YES] button to display "□□□□/□□ c = □□". The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.
   Check that the C1 error is below 20 and ADER is below 2.
7. Press the [ENTER/YES] button to display "□□□□/□□ b = □□". Check that the C1 error is about 200 and ADER is below 2.
8. Press the [ENTER/YES] button to display "□□□□/□□ a = □□". Check that the C1 error is about 200 and ADER is below 2.
9. Press the [MENU/NO] button, then press the [MD ⏏] button and take out the test disc.

5-6-8. C PLAY Check

MO Error Rate Check

Procedure:

1. Load the test disc (MDW-74/GA-1).
2. Turn the [ENTER/YES] knob to display "CPLAY2MODE" (C36).
3. Press the [ENTER/YES] button to display "CPLAY2MID".
4. The display changes to "C = □□□□ AD = □□)".
5. If the C1 error rate is below 20, check that ADER is 00.
6. Press the [MENU/NO] button to stop playback, then press the [MD ⏏] button and take out the test disc.

CD Error Rate Check

Procedure:

1. Load the check disc (TDYS-1).
2. Turn the [ENTER/YES] knob to display "CPLAY2MODE" (C36).
3. Press the [ENTER/YES] button to display "CPLAY2MID".
4. The display changes to "C = □□□□ AD = □□)".
5. Check that the C1 error rate is below 20.
6. Press the [MENU/NO] button to stop playback, then press the [MD ⏏] button and take out the check disc.

5-6-9. Self-Recording/playback Check

Prepare a continuous recording disc using the unit to be repaired and check the error rate.

Procedure:

1. Load a recordable disc (blank disc).
2. Turn the [ENTER/YES] knob to display "CREC 2MODE" (C37).
3. Press the [ENTER/YES] button to display "CREC 2MID".
4. When recording starts, lights up " **REC** " and display "CREC 2 @@@@" (@@@@ is the address).
5. About 1 minute later, press the [MENU/NO] button to stop continuous recording.
6. Turn the [ENTER/YES] knob to display "CPLAY2MODE" (C36).
7. Press the [ENTER/YES] button to display "CPLAY2 MID".
8. "C = □□□□ AD = □□)" will be displayed.
9. Check that the C1 error becomes below 20 and the AD error below 2.
10. Press the [MENU/NO] button to stop playback, then press the [MD ⏏] button and take out the disc.

5-7. INITIAL SETTING OF ADJUSTMENT VALUE

Note:
Mode which sets the adjustment results recorded in the non-volatile memory to the initial setting value. However the results of the temperature compensation offset adjustment will not change to the initial setting value.
If initial setting is performed, perform all adjustments again excluding the temperature compensation offset adjustment.
For details of the initial setting, refer to "5-4. Precautions for Adjustments" (See page 39) and execute the initial setting before the adjustment as required.

Procedure:
1. Turn the [ENTER/YES] knob to display "ADJ CLEAR" (C28).
2. Press the [ENTER/YES] button. "Complete!" will be displayed momentarily and initial setting will be executed, after which "ADJ CLEAR" (C28) will be displayed.

5-8. RECORDING AND DISPLAYING THE IOP INFORMATION

The IOP data can be recorded in the non-volatile memory. The IOP value on the optical pick-up label and the IOP value after the adjustment will be recorded. Recording these data eliminates the need to read the label on the optical pick-up.

Recording Procedure:
1. Turn the [ENTER/YES] knob to display "Iop Write" (C05), and press the [ENTER/YES] button.
2. The display becomes "Ref=@@@.@" (@ is an arbitrary number) and the numbers which can be changed will blink.
3. Input the IOP value on the optical pick-up label.
   To select the number : Turn the [ENTER/YES] knob.
   To select the digit : Press the [CD SYNC NORM SPEED] button to lights up "IT" indicator, then press the [REC MODE] button.
4. When the [ENTER/YES] button is pressed, the display becomes "Measu=@@@.@" (@ is an arbitrary number).
5. As the adjustment results are recorded for the step 4 value. Leave it as it is and press the [ENTER/YES] button.
6. "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write" (C05).

Display Procedure:
1. Turn the [ENTER/YES] knob to display "Iop Read"(C26).
2. "@@.@/##.#" is displayed and the recorded contents are displayed.
   @@.@ indicates the IOP value on the optical pick-up label.
   ##.# indicates the IOP value after adjustment
3. To end, press the [MENU/NO] button to display "Iop Read" (C26).

5-9. TEMPERATURE COMPENSATION OFFSET ADJUSTMENT

Save the temperature data at that time in the non-volatile memory as 25 ˚C reference data.

Note:
1. Usually, do not perform this adjustment.
2. Perform this adjustment in an ambient temperature of 22 ˚C to 28 ˚C. Perform it immediately after the power is turned on when the internal temperature of the unit is the same as the ambient temperature of 22 ˚C to 28 ˚C.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambient temperature.

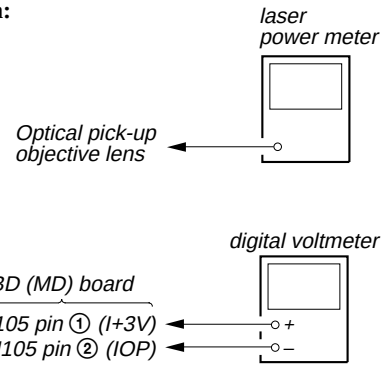
Procedure:
1. Turn the [ENTER/YES] knob to display "TEMP ADJUST" (C03).
2. Press the [ENTER/YES] button to select the "TEMP ADJUST" mode.
3. "TEMP = ▯▯ [OK]" and the current temperature data will be displayed.
4. To save the data, press the [ENTER/YES] button.
   When not saving the data, press the [MENU/NO] button.
5. When the [ENTER/YES] button is pressed, "TEMP = ▯▯ SAVE" will be displayed and turned back to "TEMP ADJUST" (C03) display then. When the [MENU/NO] button is pressed, "TEMP ADJUST" (C03) will be displayed immediately.

Specified Value:
The "TEMP = ▯▯" should be within "E0 - EF", "F0 - FF", "00 - 0F", "10 - 1F" and "20 - 2F".

5-10. LASER POWER ADJUSTMENT

Check the IOP value of the optical pick-up before adjustments. (Refer to 5-8. Recording and Displaying the Iop Information)

Connection:



Procedure:
1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, turn the [CURSOR ◀◀ ◀▬▬▶ ▶▶] knob to move the optical pick-up)
   Connect the digital voltmeter to CN105 pin ① (I+3V) and CN105pin ② (IOP) on the BD (MD) board.
2. Turn the [ENTER/YES] knob to display "LDPWR ADJUST" (C04).
   (Laser power : For adjustment)
3. Press the [ENTER/YES] button once to display "LD 0.9 mW $ ▯▯".
4. Turn the [ENTER/YES] knob so that the reading of the laser power meter becomes 0.85 to 0.91 mW. Press the [ENTER/YES] button after setting the range knob of the laser power meter, and save the adjustment results. ("LD SAVE $ ▯▯" will be displayed for a moment)
5. Then "LD 7.0 mW $ ▯▯" will be displayed.

6. Turn the [ENTER/YES] knob so that the reading of the laser power meter becomes 6.9 to 7.1 mW, press the [ENTER/YES] button to save it.

Note: Do not perform the emission with 7.0 mW more than 15 seconds continuously.

7. Then, turn the [ENTER/YES] knob to display "LDPWR CHECK" (C13).
8. Press the [ENTER/YES] button once to display "LD 0.9mW$ ". Check that the reading of the laser power meter become 0.85 to 0.91 mW.
9. Press the [ENTER/YES] button once more to display "LD 7.0mW$ ". Check that the reading the laser power meter and digital voltmeter satisfy the specified value.
   Note down the digital voltmeter reading value.

Specified Value:

Laser power meter reading: 7.0 ± 0.2 mW

Digital voltmeter reading : Value on the optical pick-up label ±10%

(Optical pick-up label)

KMS262A
20101
B0825

For details of the method for checking this value, refer to "5-8. Recording and Displaying the Iop Information"

IOP=82.5 mA in this case

IOP (mA) = Digital voltmeter reading (mV)/1 (Ω)

10. Press the [MENU/NO] button to display "LDPWR CHECK" (C13) and stop the laser emission.
    (The [MENU/NO] button is effective at all times to stop the laser emission)
11. Turn the [ENTER/YES] knob to display "Iop Write" (C05).
12. Press the [ENTER/YES] button. When the display becomes Ref=@@@.@ (@ is an arbitrary number), press the [ENTER/YES] button to display "Measu=@@@.@" (@ is an arbitrary number).
13. The numbers which can be changed will blink. Input the Iop value noted down at step 9.
    To select the number : Turn the [ENTER/YES] knob.
    To select the digit : Press the [CD SYNC NORM SPEED] button to lights up "IT" indicator, then press the [REC MODE] button.
14. When the [ENTER/YES] button is pressed, "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write" (C05).

Note: After step 4, each time the [ENTER/YES] button is pressed, the display will be switched "LD 0.7mW$ ", "LD 7.5mW$ ", and "LD Wpホセイ$ ". Nothing needs to be performed here.

Adjustment Location: BD (MD) board (see page 47)

5-11. Iop NV SAVE

Write the reference values in the nonvolatile memory to perform "Iop compare". As this involves rewriting the reference values, do not perform this procedure except when adjusting the laser power during replacement of the optical pick-up and when replacing the IC102. Otherwise the optical pick-up check may deteriorate.

Note: Perform this function with the optical pick-up set at room temperature.

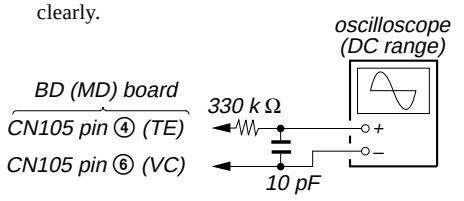
Procedure:

1. Turn the [ENTER/YES] knob to display "Iop NV Save" (C06).
2. Press the [ENTER/YES] button and display "Iop [stop]".
3. After the display changes to "Iop =xxsave?", press the [ENTER/YES] button.
4. After "Complete!" is displayed momentarily, the display changes to "Iop 7.0 mW".
5. After the display changes to "Iop=yysave?", press the [ENTER/YES] button.
6. When "Complete!" is displayed, it means that Iop NV saving has been completed.

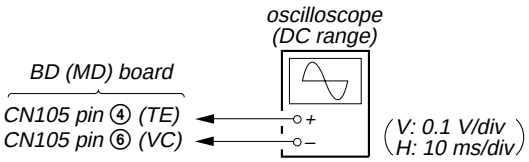
5-12. TRAVERSE ADJUSTMENT

Note 1: Data will be erased during MO reading if a recorded disc is used in this adjustment.

Note 2: If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



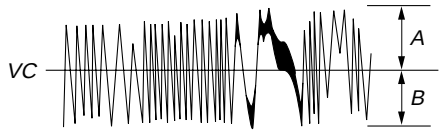
Connection:



Procedure:

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) on the BD (MD) board.
2. Load a disc (any available on the market). (Refer to Note 1)
3. Turn the [CURSOR ◀◀ ▬▬ ▶▶] knob to move the optical pick-up outside the pit.
4. Turn the [ENTER/YES] knob to display "EF MO ADJUST" (C07).
5. Press the [ENTER/YES] button to display "EFB = MO-R". (Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Turn the [ENTER/YES] knob so that the waveform of the oscilloscope becomes the specified value.
   (When the [ENTER/YES] knob is turned, the of "EFB= " changes and the waveform changes) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
   (Read power traverse adjustment)

Traverse Waveform

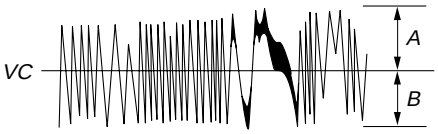


Specification A = B

7. Press the [ENTER/YES] button and save the result of adjustment to the non-volatile memory ("EFB = SAVE" will be displayed for a moment. Then "EFB = MO-W" will be displayed).

8. Turn the [ENTER/YES] knob so that the waveform of the oscilloscope becomes the specified value.
   (When the [ENTER/YES] knob is turned, the □□ of "EFB= □□" changes and the waveform changes) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
   (Write power traverse adjustment)

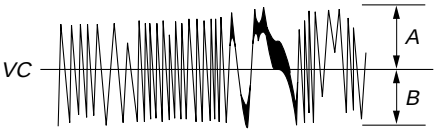
Traverse Waveform



Specification A = B

9. Press the [ENTER/YES] button, and save the adjustment results in the non-volatile memory. ("EFB = □□ SAVE" will be displayed for a moment)
10. "EFB = □□ MO-P" will be displayed.
    The optical pick-up moves to the pit area automatically and servo is imposed.
11. Turn the [ENTER/YES] knob until the waveform of the oscilloscope moves closer to the specified value.
    In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

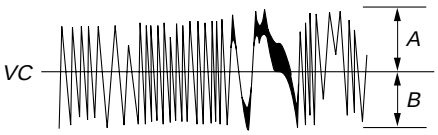
Traverse Waveform



Specification A = B

12. Press the [ENTER/YES] button, and save the adjustment results in the non-volatile memory. ("EFB = □□ SAVE" will be displayed for a moment)
    Next "EF MO ADJUST" (C07) is displayed. The disc stops rotating automatically.
13. Press the [MD ⏏] button and take out the disc.
14. Load the check disc (TDYS-1).
15. Turn the [ENTER/YES] knob to display "EF CD ADJUST" (C08).
16. Press the [ENTER/YES] button to display "EFB = □□ CD". Servo is imposed automatically.
17. Turn the [ENTER/YES] knob so that the waveform of the oscilloscope moves closer to the specified value.
    In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

Traverse Waveform



Specification A = B

18. Press the [ENTER/YES] button, display "EFB = □□ SAVE" for a moment and save the adjustment results in the non-volatile memory.
    Next "EF CD ADJUST" (C08) will be displayed.
19. Press the [MD⏏] button and take out the check disc.

Adjustment Location: BD (MD) board (see page 47)

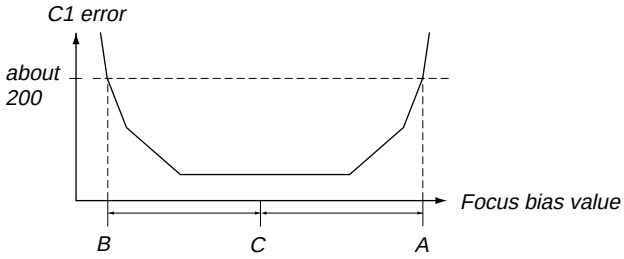
5-13. FOCUS BIAS ADJUSTMENT

Procedure:

1. Load the continuously-recorded disc. (Refer to "5-5. USING THE CONTINUOUSLY RECORDED DISC" (See page 40))
2. Turn the [ENTER/YES] knob to display "CPLAY2 MODE" (C36).
3. Press the [ENTER/YES] button to display "CPLAY2MID".
4. Press the [MENU/NO] button when "C = □□□□ AD = □□)" is displayed.
5. Turn the [ENTER/YES] knob to display "FBIAS ADJUST" (C09).
6. Press the [ENTER/YES] button to display "□□□□/□□ a = □□".
   The first four digits indicate the C1 error rate, the two digits after "/ " indicate ADER, and the 2 digits after "a =" indicate the focus bias value.
7. Turn the [ENTER/YES] knob in the clockwise and find the focus bias value at which the C1 error rate becomes about 200 (refer to Note 2).
8. Press the [ENTER/YES] button to display "□□□□/□□ b = □□".
9. Turn the [ENTER/YES] knob in the counterclockwise and find the focus bias value at which the C1 error rate becomes about 200.
10. Press the [ENTER/YES] button to display "□□□□/□□ c = □□".
11. Check that the C1 error rate is below 20 and ADER is 00. Then press the [ENTER/YES] button.
12. If the "(□□)" in "□□ - □□ - □□ (□□)" is above 20, press the [ENTER/YES] button.
    If below 20, press the [MENU/NO] button and repeat the adjustment from step 2.
13. Press the [MD ⏏] button and take out the disc.

Note 1: The relation between the C1 error and focus bias is as shown in the following figure. Find points A and B in the following figure using the above adjustment. The focal point position C is automatically calculated from points A and B.

Note 2: As the C1 error rate changes, perform the adjustment using the average vale.



5-14. ERROR RATE CHECK

5-14-1. CD Error Rate Check

Procedure:

1. Load the check disc (TDYS-1).
2. Turn the [ENTER/YES] knob to display "CPLAY2 MODE" (C36).
3. Press the [ENTER/YES] button twice and display "CPLAY2 MID".
4. The display changes to "C = □□□□ AD = □□)".
5. Check that the C1 error rate is below 20.
6. Press the [MENU/NO] button to stop playback, then press the [MD ⏏] button and take out the check disc.

5-14-2. MO Error Rate Check

Procedure:

1. Load the continuously-recorded disc. (Refer to "5-5. USING THE CONTINUOUSLY RECORDED DISC" (See page 40))
2. Turn the [ENTER/YES] knob to display "CPLAY2 MODE" (C36).
3. Press the [ENTER/YES] button to display "CPLAY2MID".
4. The display changes to "C = □□□□ AD = □□)".
5. If the C1 error rate is below 20, check that ADER is 00.
6. Press the [MENU/NO] button to stop playback, then press the [MD ⏏] button and take out the disc.

5-15. FOCUS BIAS CHECK

Change the focus bias and check the focus tolerance amount.

Procedure:

1. Load the continuously-recorded disc. (Refer to "5-5. USING THE CONTINUOUSLY RECORDED DISC" (See page 40))
2. Turn the [ENTER/YES] knob to display "CPLAY2 MODE" (C36).
3. Press the [ENTER/YES] button twice to display "CPLAY2 MID".
4. Press the [MENU/NO] button when "C = □□□□ AD = □□)" is displayed.
5. Turn the [ENTER/YES] knob to display "FBIAS CHECK" (C16).
6. Press the [ENTER/YES] button to display "□□□□/□□ c = □□".
   The first four digits indicate the C1 error rate, the two digits after "/ " indicate ADER, and the 2 digits after "c =" indicate the focus bias value.
   Check that the C1 error is below 20 and ADER is below 2.
7. Press the [ENTER/YES] button and display "□□□□/□□ b = □□".
   Check that the C1 error is below 200 and ADER is below 2.
8. Press the [ENTER/YES] button and display "□□□□/□□ a = □□".
   Check that the C1 error is below 200 and ADER is below 2
9. Press the [MENU/NO] button, then press the [MD ⏏] button and take out the disc.

Note: If the C1 error and ADER are above other than the specified value at points a (step 8. in the above) or b (step 7. in the above), the focus bias adjustment may not have been carried out properly. Adjust perform the beginning again.

5-16. AUTO GAIN CONTROL OUTPUT LEVEL ADJUSTMENT

Be sure to perform this adjustment when the optical pick-up is replaced.
If the adjustment results becomes "Adjust NG!", the optical pick-up may be faulty or the servo system circuits may be abnormal.

5-16-1. CD Auto Gain Control Output Level Adjustment

Procedure:

1. Load the check disc (TDYS-1).
2. Turn the [ENTER/YES] knob to display "AG Set (CD)" (C11).
3. When the [ENTER/YES] button is pressed, the adjustment will be performed automatically.
   "Complete!" will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to "AG Set (CD)" (C11).
4. Press the [MD ⏏] button and take out the check disc.

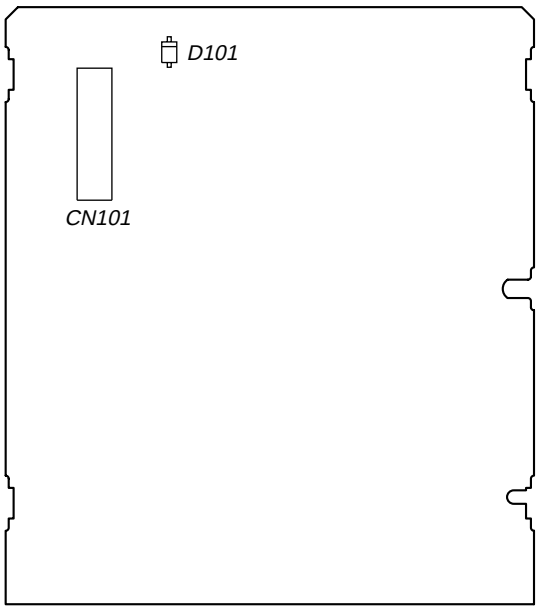
5-16-2. MO Auto Gain Control Output Level Adjustment

Procedure:

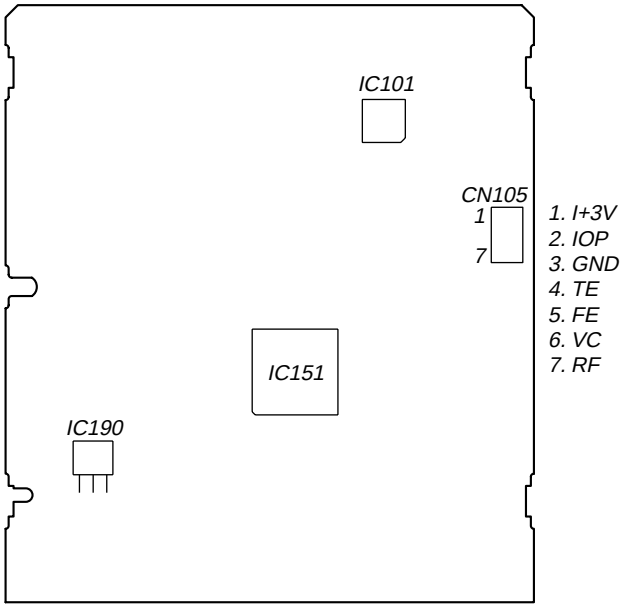
1. Load the test disc (MDW-74/GA-1).
2. Turn the [ENTER/YES] knob to display "AG Set (MO)" (C10).
3. When the [ENTER/YES] button is pressed, the adjustment will be performed automatically.
   "Complete!" will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to "AG Set (MO)" (C10).
4. Press the [MD ⏏] button and take out the test disc.

Adjustment and checking Loacation:

– BD (MD) BOARD (Component Side) –



– BD (MD) BOARD (Conductor Side) –



Note: It is useful to use the jig for checking BD (MD) board waveform. (Refer to Servicing Notes on page 9)

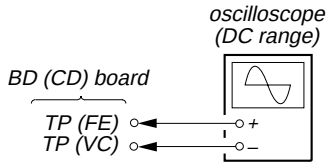
CD SECTION

Note:

1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than 10MΩ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.
5. Level doesn't change whichever with normal speed or with four times speed.

S Curve Check

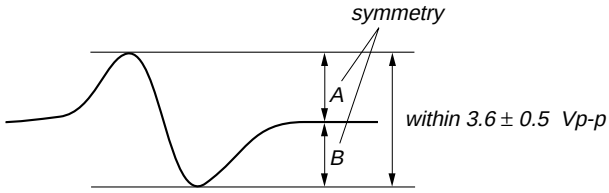
Connection:



Procedure:

1. Connect an oscilloscope to test point TP (FE) and TP (VC) on the BD (CD) board.
2. Turn the power on.
3. Put the disc (YEDS-18) in and turned power switch on again and actuate the focus search. (actuate the focus search when disc table is moving in and out)
4. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3.6 ± 0.5 Vp-p.

S-curve waveform

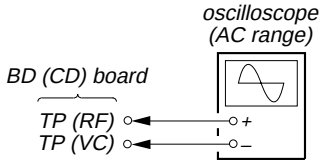


Note: • Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.
• Take sweep time as long as possible and light up the brightness to obtain best waveform.

Checking Location: BD (CD) board (see page 48)

RF Level Check

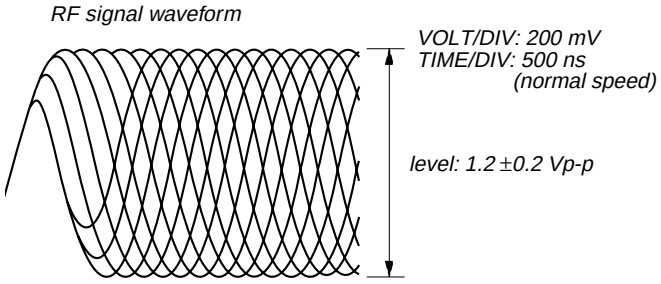
Connection:



Procedure:

1. Connect an oscilloscope to test point TP (RF) and TP (VC) on the BD (CD) board.
2. Turn the power on.
3. Put the disc (YEDS-18) in to playback the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

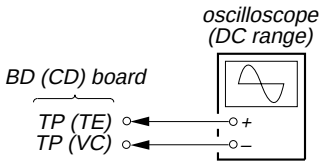
Note: A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.



Checking Location: BD (CD) board

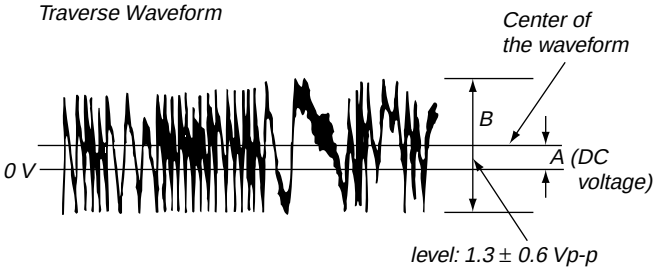
E-F Balance Check

Connection:

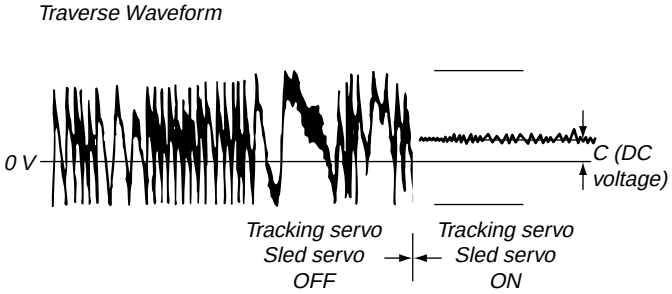


Procedure:

1. Connect an oscilloscpe to test point TP (TE) and TP (VC) on the BD (CD) board.
2. Turn the power on.
3. Put the disc (YEDS-18) in to playback the number five track.
4. Press the REPEAT button. (The tracking servo and the sledding servo are turned OFF)
5. Check the level B of the oscilliscope's waveform and the A (DC voltage) of the center of the Traverse waveform.
   Confirm the following :
   A/B x 100 = less than ± 22%



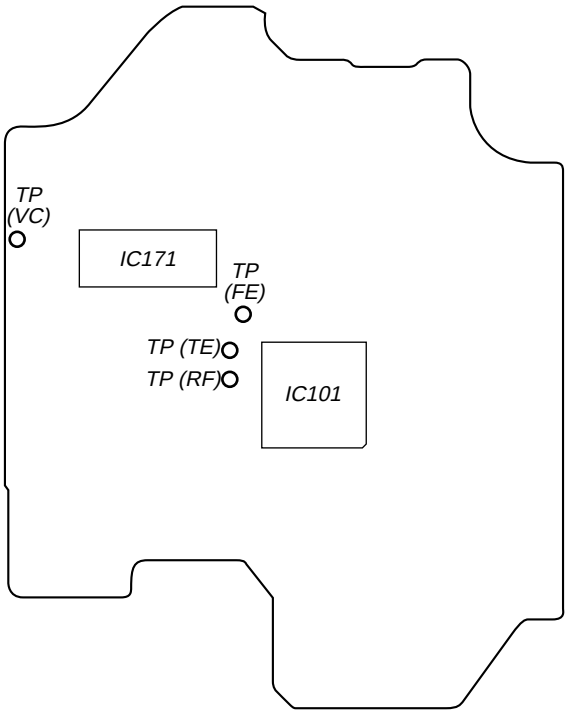
6. Press the REPEAT button. (The tracking servo and sledding servo are turned ON)
   Confirm the C (DC voltage) is almost equal to the A (DC voltage) is step 5.



Checking Location: BD (CD) board

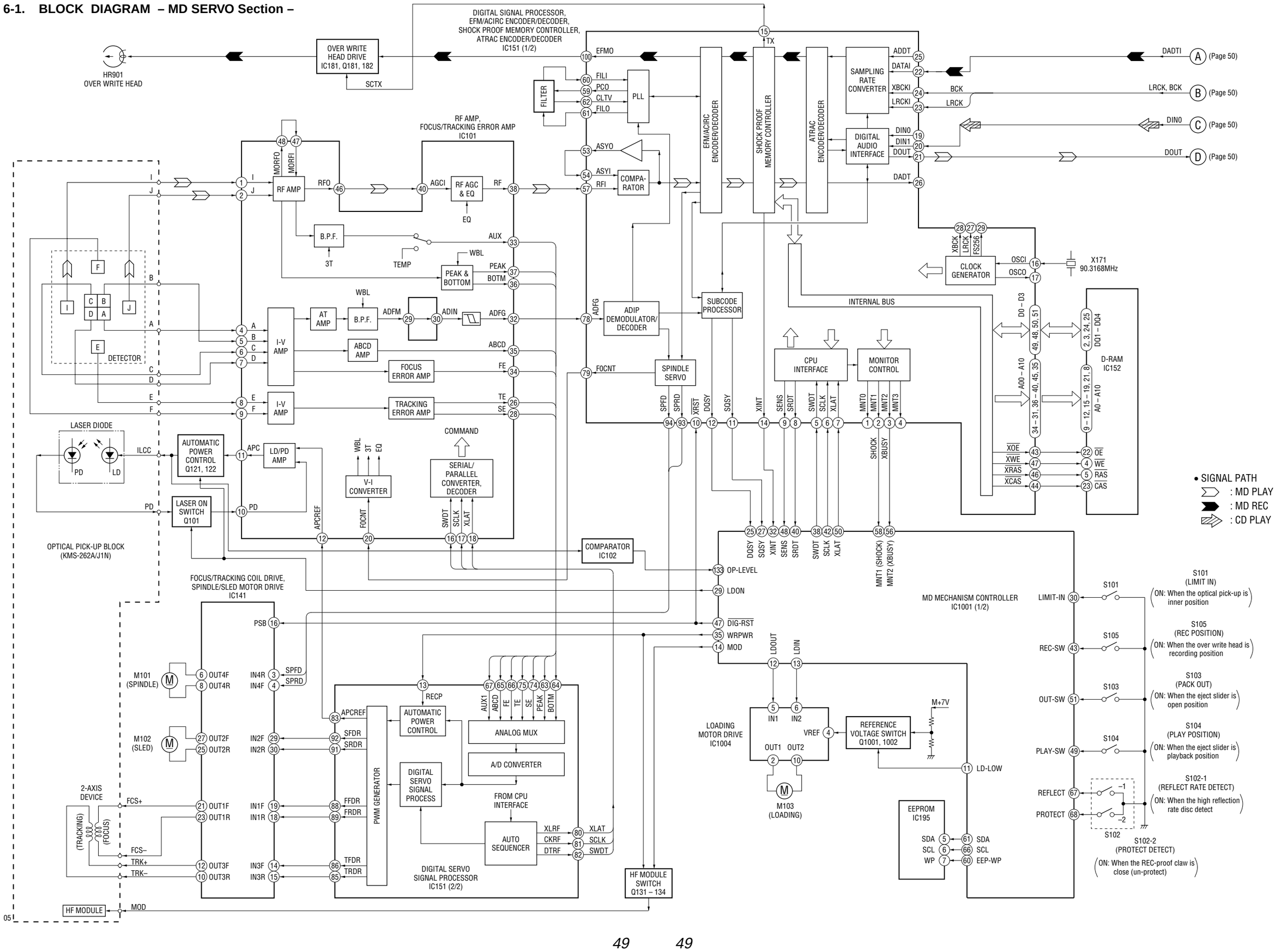
Checking Location:

– BD (CD) BOARD (Conductor Side) –

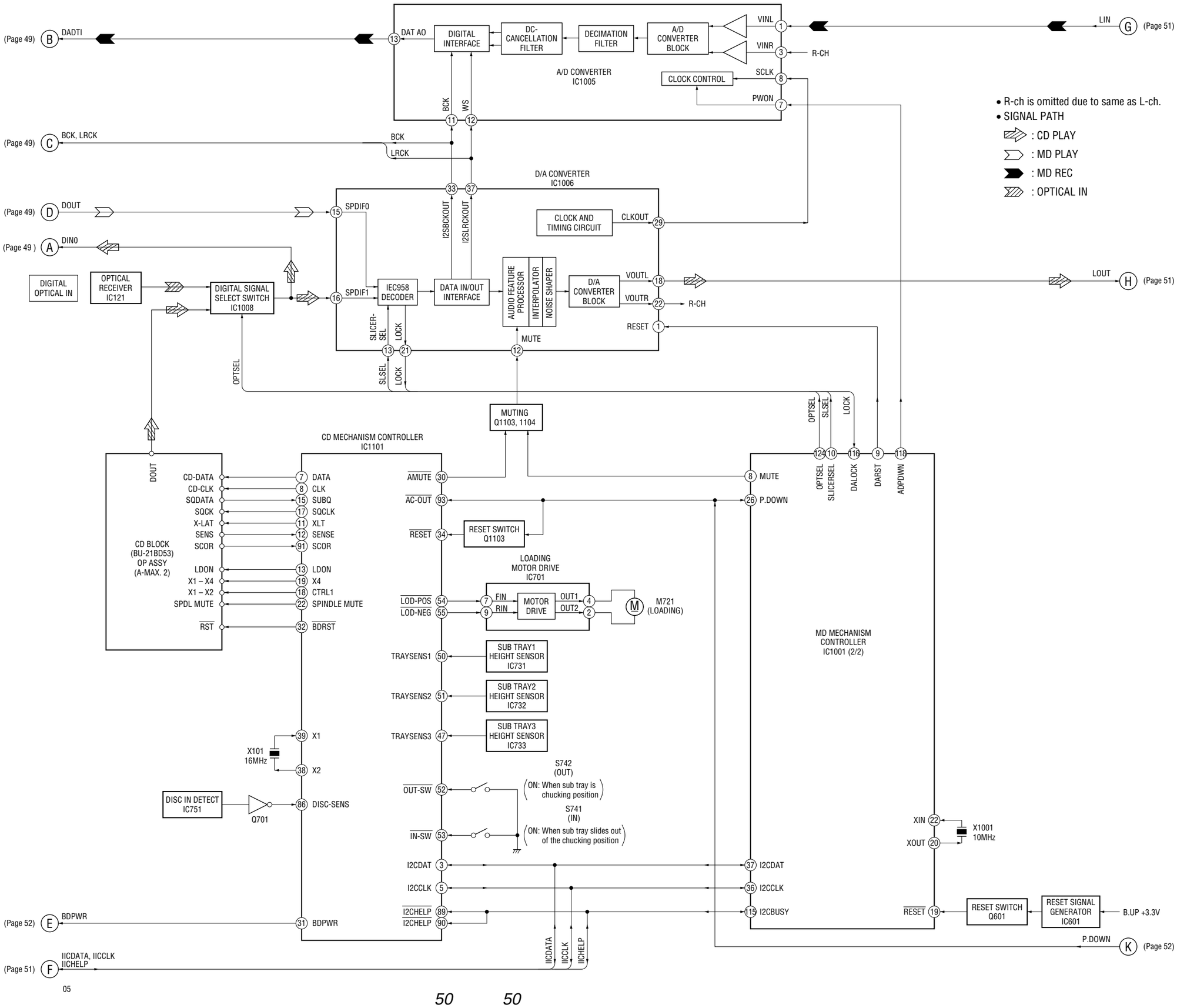


SECTION 6
DIAGRAMS

6-1. BLOCK DIAGRAM – MD SERVO Section –

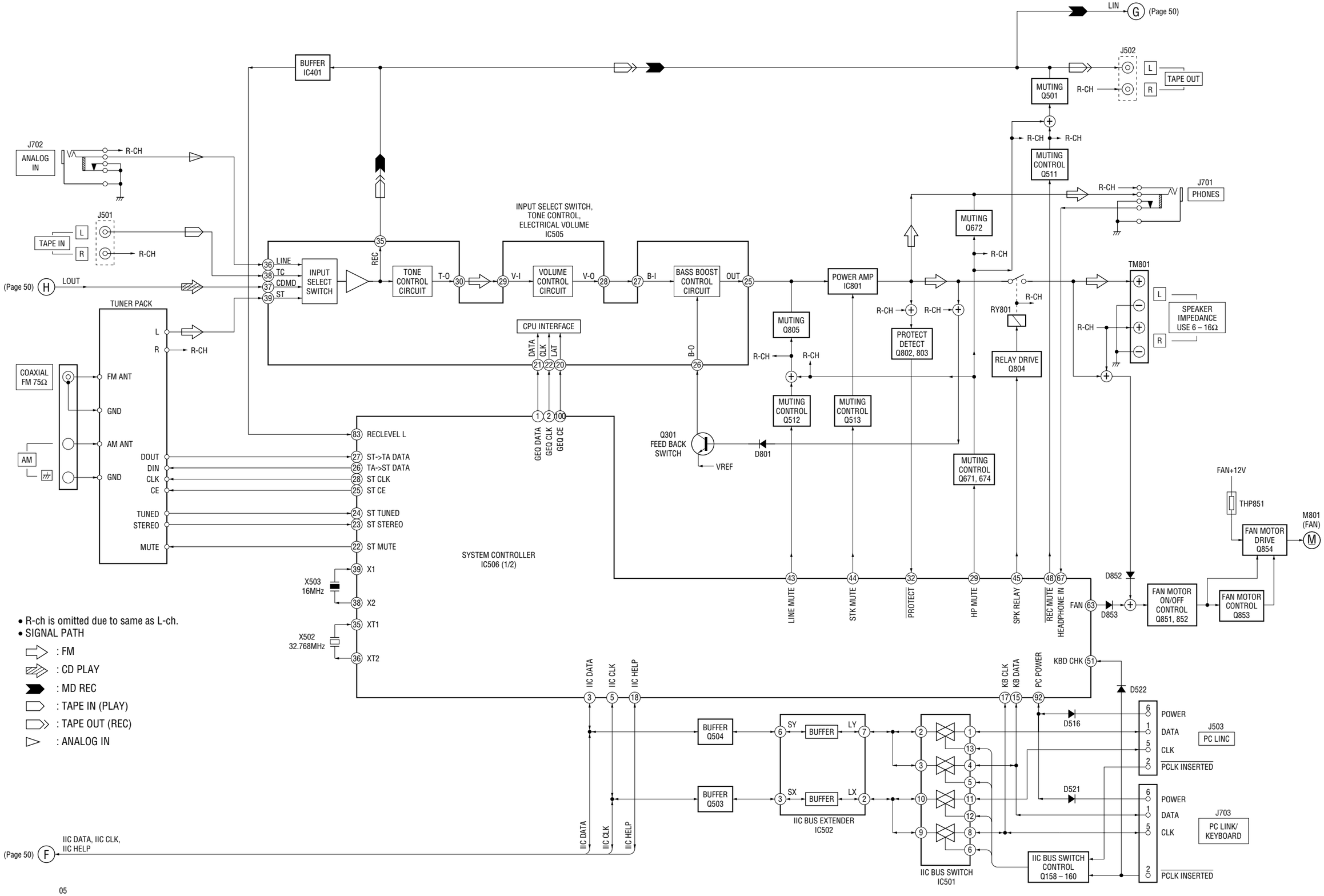


6-2. BLOCK DIAGRAMS – D/A, A/D CONVERTER Section –



05

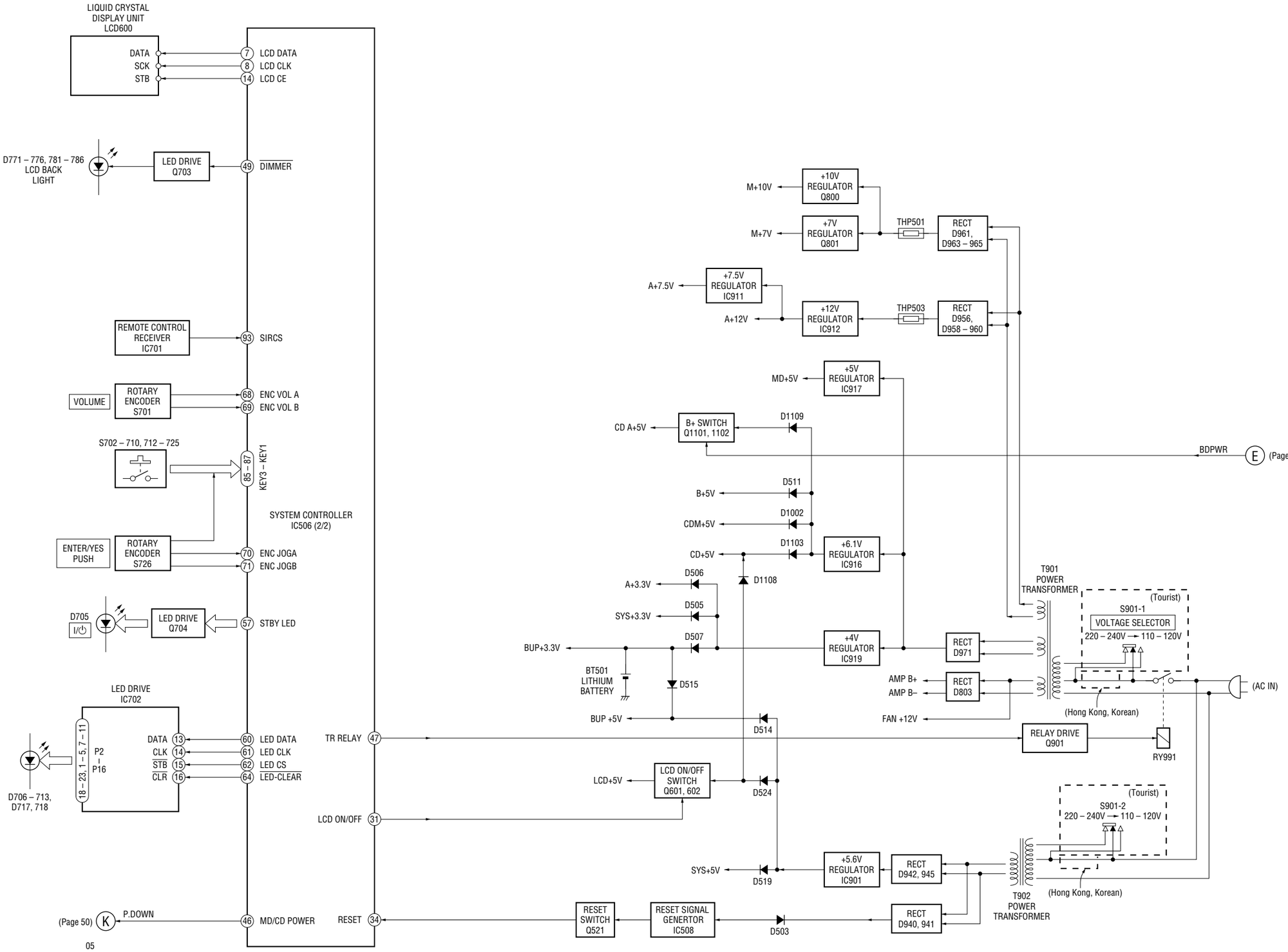
6-3. BLOCK DIAGRAM – MAIN Section –



- R-ch is omitted due to same as L-ch.
- SIGNAL PATH
  - : FM
  - : CD PLAY
  - : MD REC
  - : TAPE IN (PLAY)
  - : TAPE OUT (REC)
  - : ANALOG IN

05

6-4. BLOCK DIAGRAM – DISPLAY/POWER Section –



6-5. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS (In addition to this, the necessary note is printed in each block)

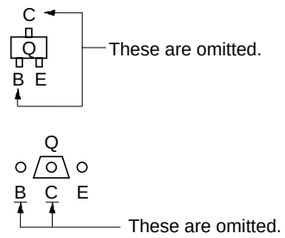
Note on Printed Wiring Board:

- ○——— : parts extracted from the component side.
- ——— : parts extracted from the conductor side.
- ▒▒▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component Side)	Parts on the parts face side seen from the parts face are indicated.

- Indication of transistor.



Printed wiring board of BD (CD) board is shown only for referring, because CD base unit is replaced as a block.

Note on Schematic Diagram:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- % : indicates tolerance.
- △ : internal component.
- : nonflammable resistor.
- : fusible resistor.
- : panel designation.

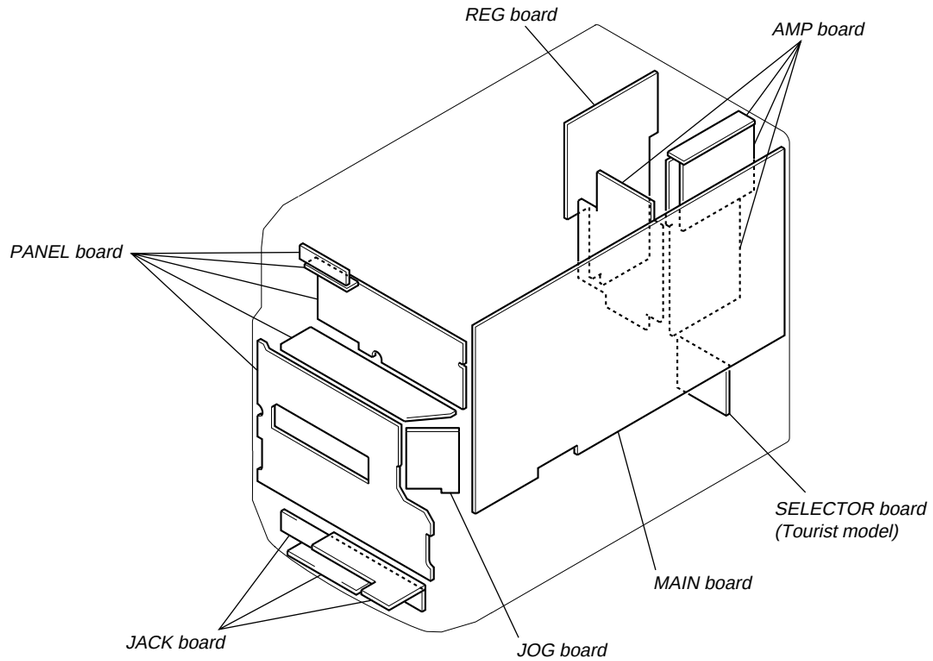
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

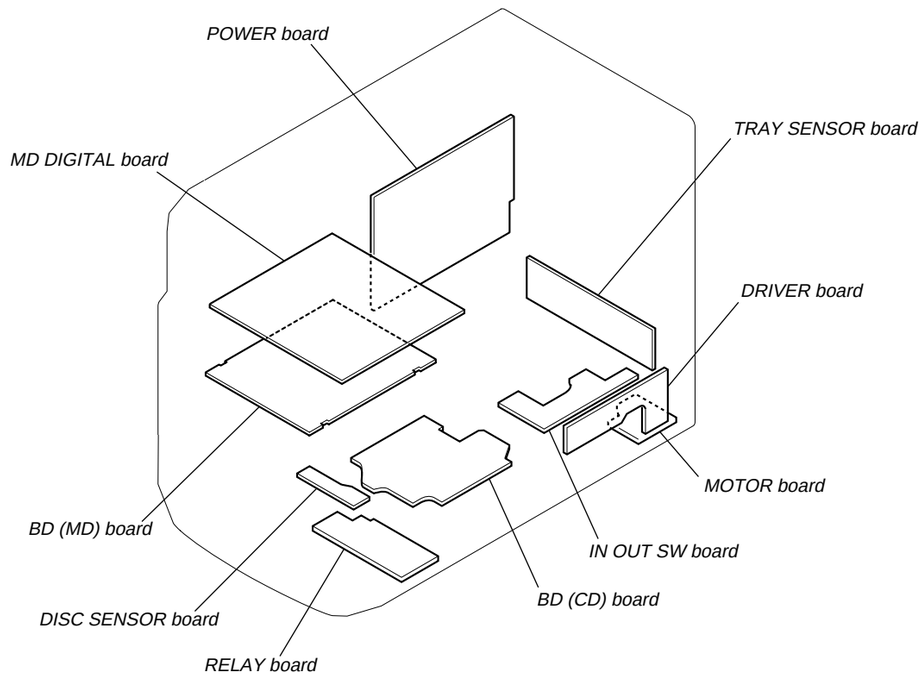
以阴影和⚠标志来识别的零部件在安全方面具有关键性。因此只能以规定号码的零部件来更换。

- B+ : B+ Line.
- B− : B– Line.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  - : TUNER
  - : CD PLAY
  - : MD PLAY
  - : MD REC
  - : DIGITAL OPTICAL IN
  - : TAPE IN (PLAY)
  - : TAPE OUT (REC)
  - : ANALOG IN
- Abbreviation
  - HK : Hong Kong model
  - JE : Tourist model
  - KR : Korean model

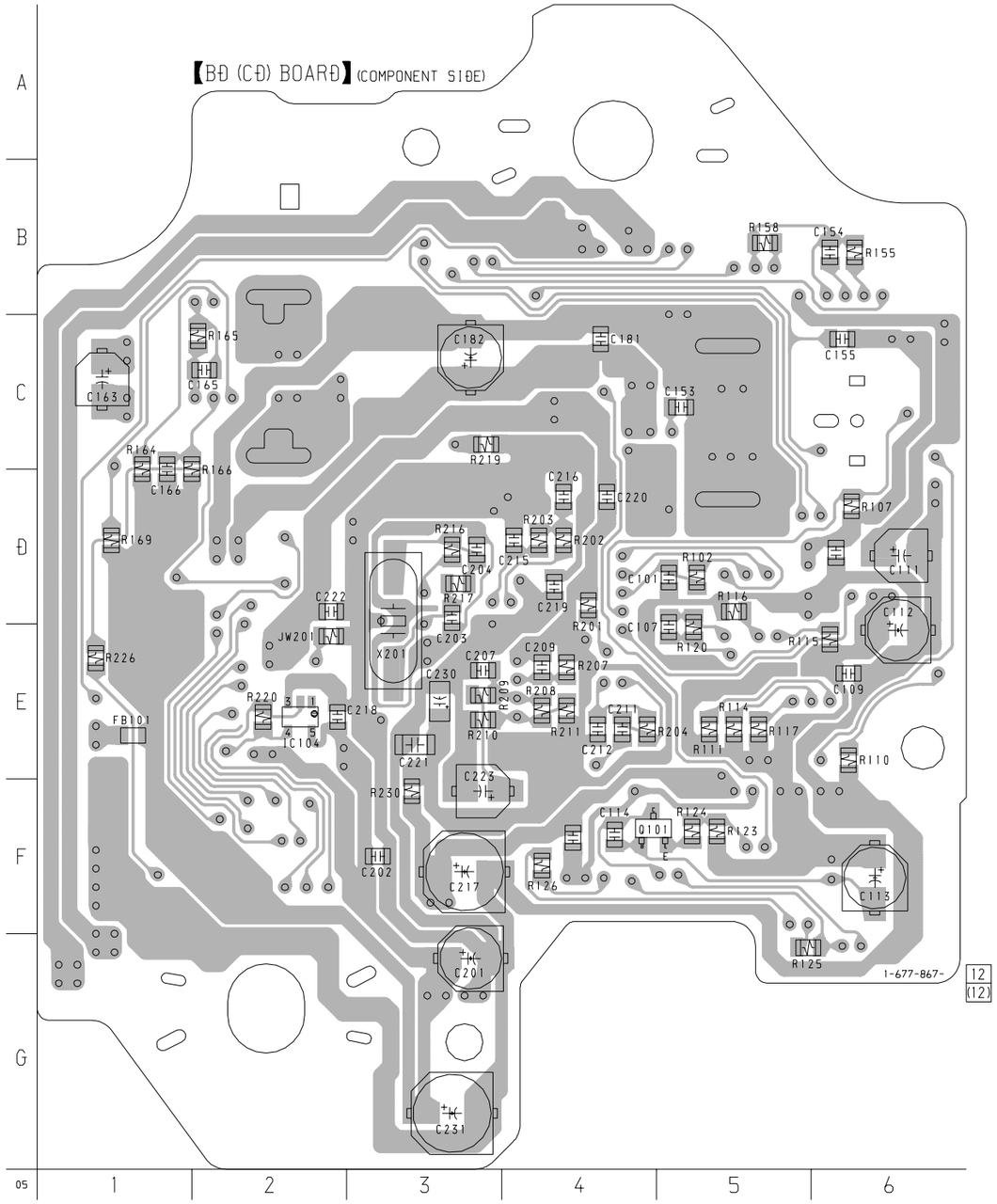
Schematic diagram of BD (CD) board is shown only for referring, because CD base unit is replaced as a block.

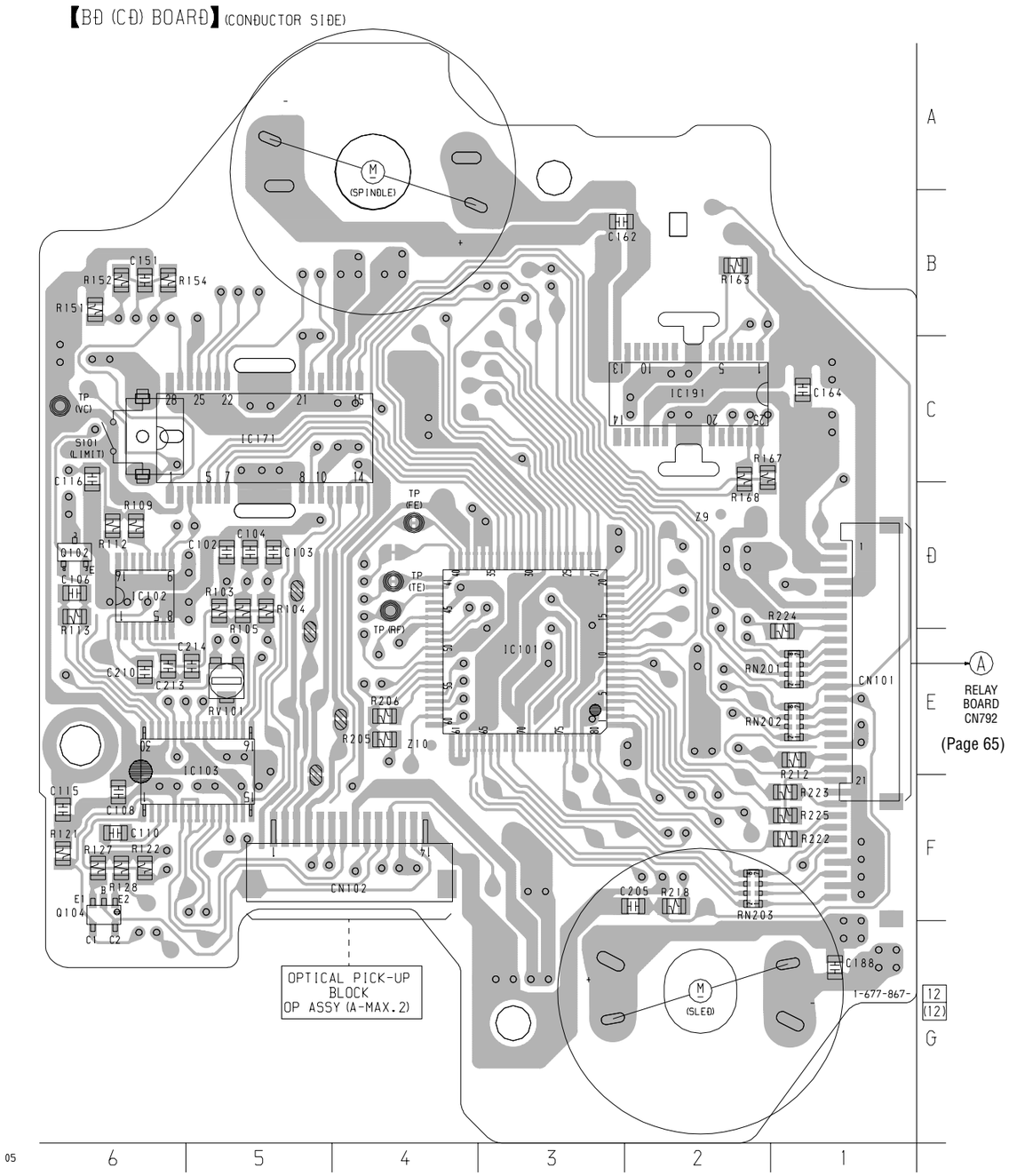
- **Circuit Boards Location**





6-6. PRINTED WIRING BOARD – BD (CD) Board – • See page 53 for Circuit Boards Location.

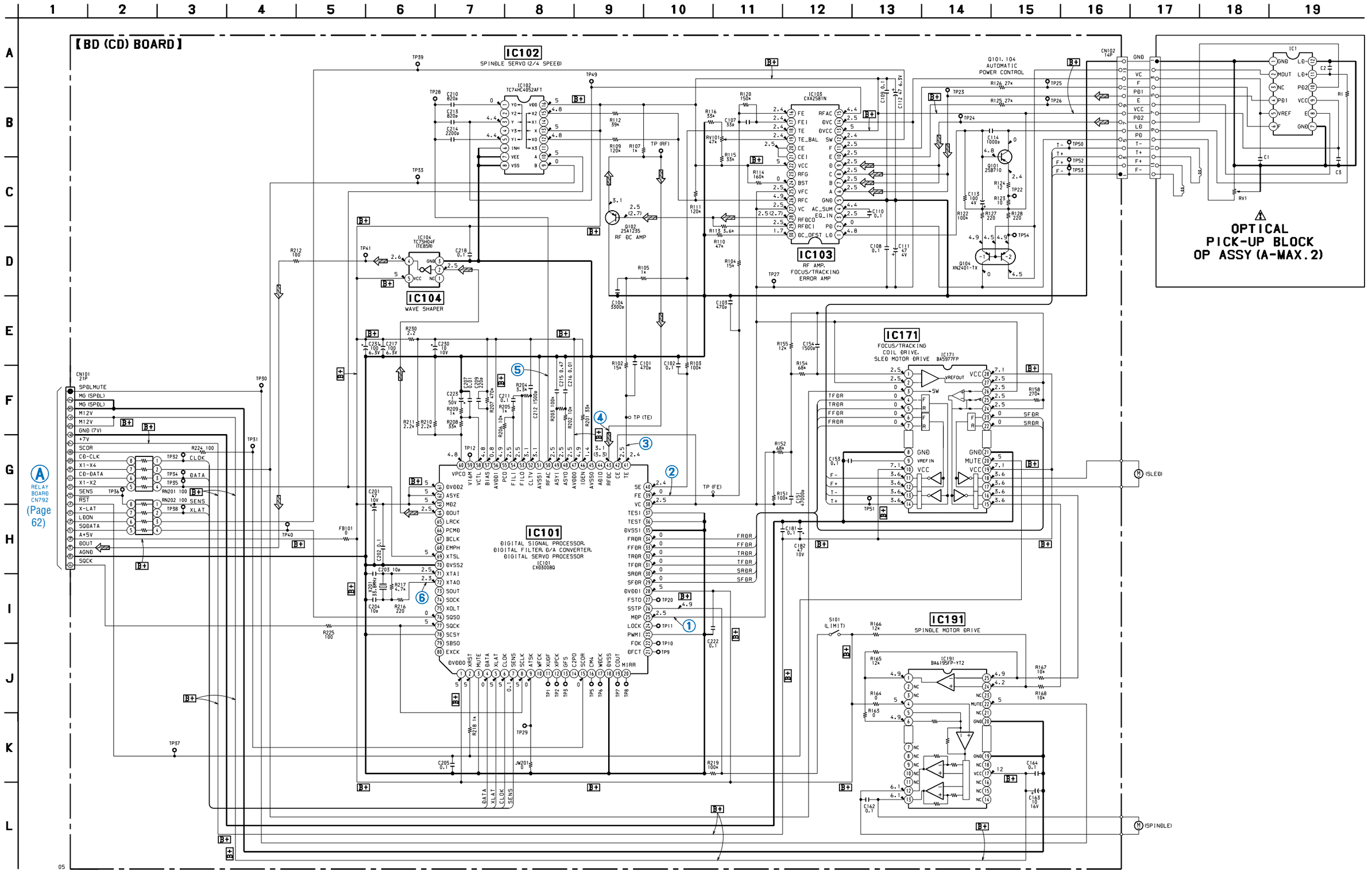




There are a few cases that the part isn't mounted in model is printed on diagrams.

Printed wiring board of BD (CD) board is shown only for referring, because CD base unit is replaced as a block.

6-7. SCHEMATIC DIAGRAM – BD (CD) Board – • See page 69 for Waveforms.



- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : CD STOP
  ( ) : CD PLAY

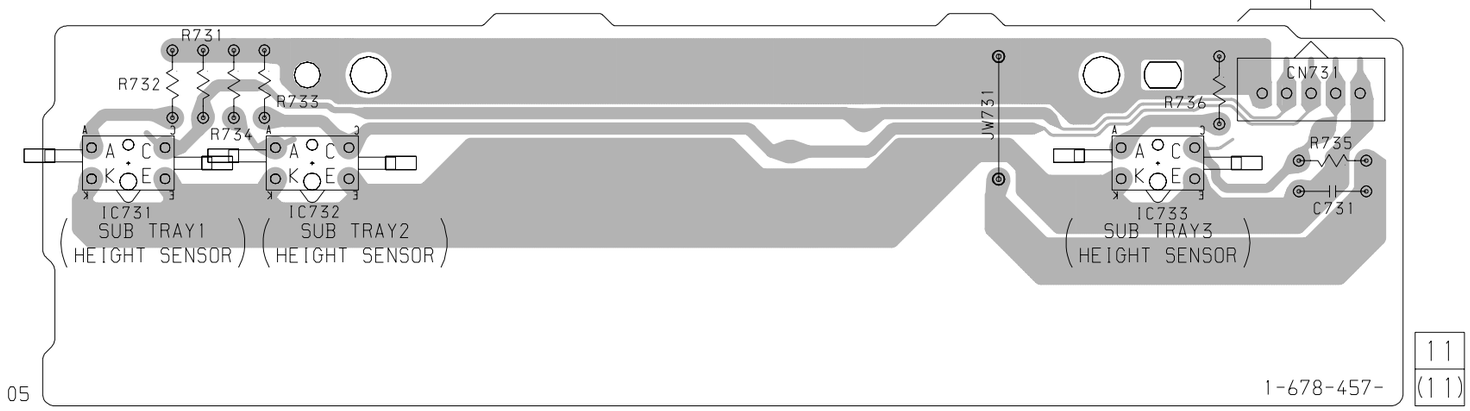
Schematic diagram of BD (CD) board is shown only for referring, because CD base unit is replaced as a block.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

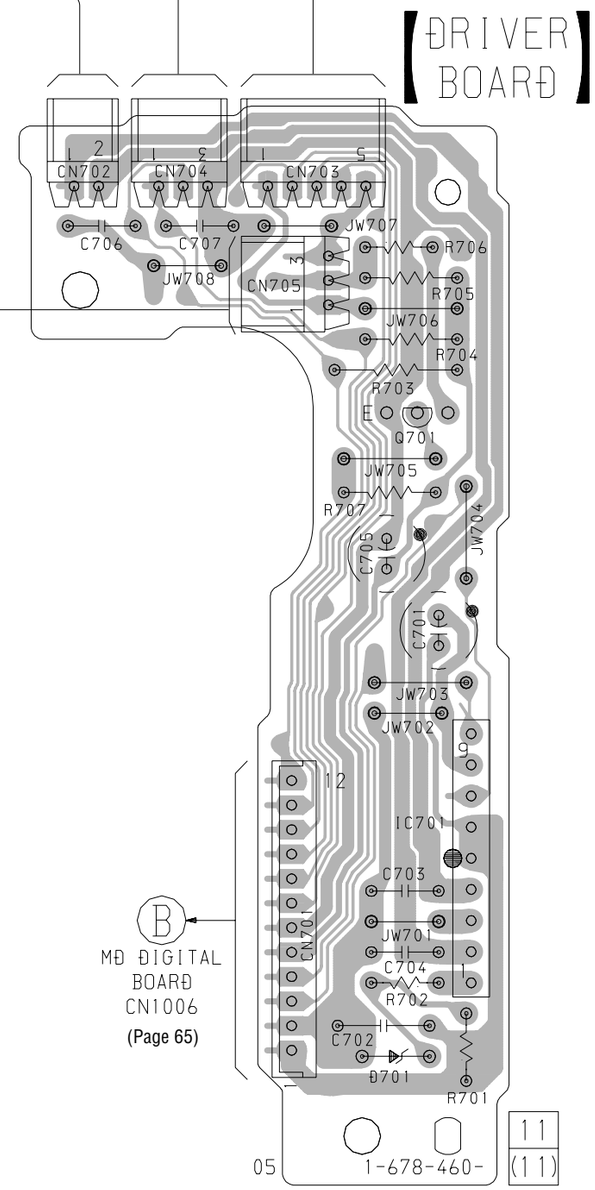
以阴影和⚠标志来识别的零部件在安全方面具有关键性。因此只能以规定号码的零部件来更换。

6-8. PRINTED WIRING BOARDS – CD CHANGER Section – • See page 53 for Circuit Boards Location.

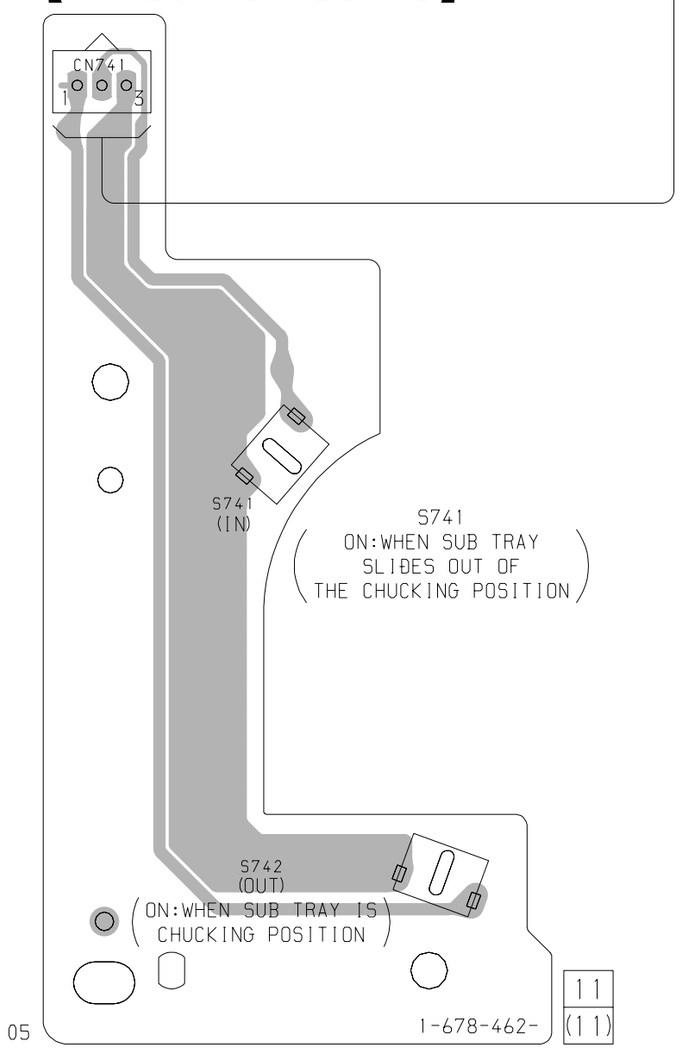
【TRAY SENSOR BOARD】



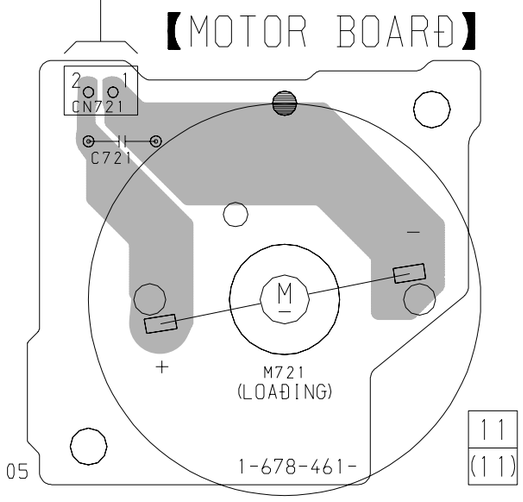
【DRIVER BOARD】



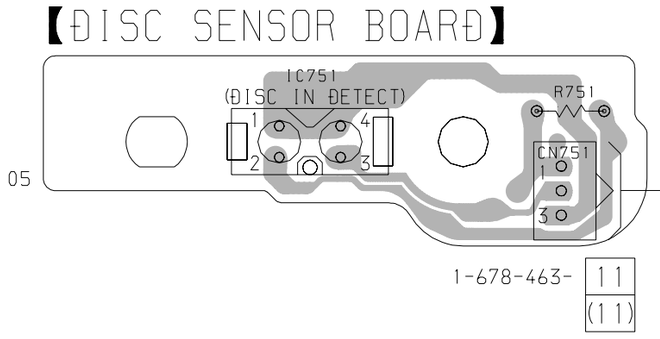
【IN OUT SW BOARD】



【MOTOR BOARD】

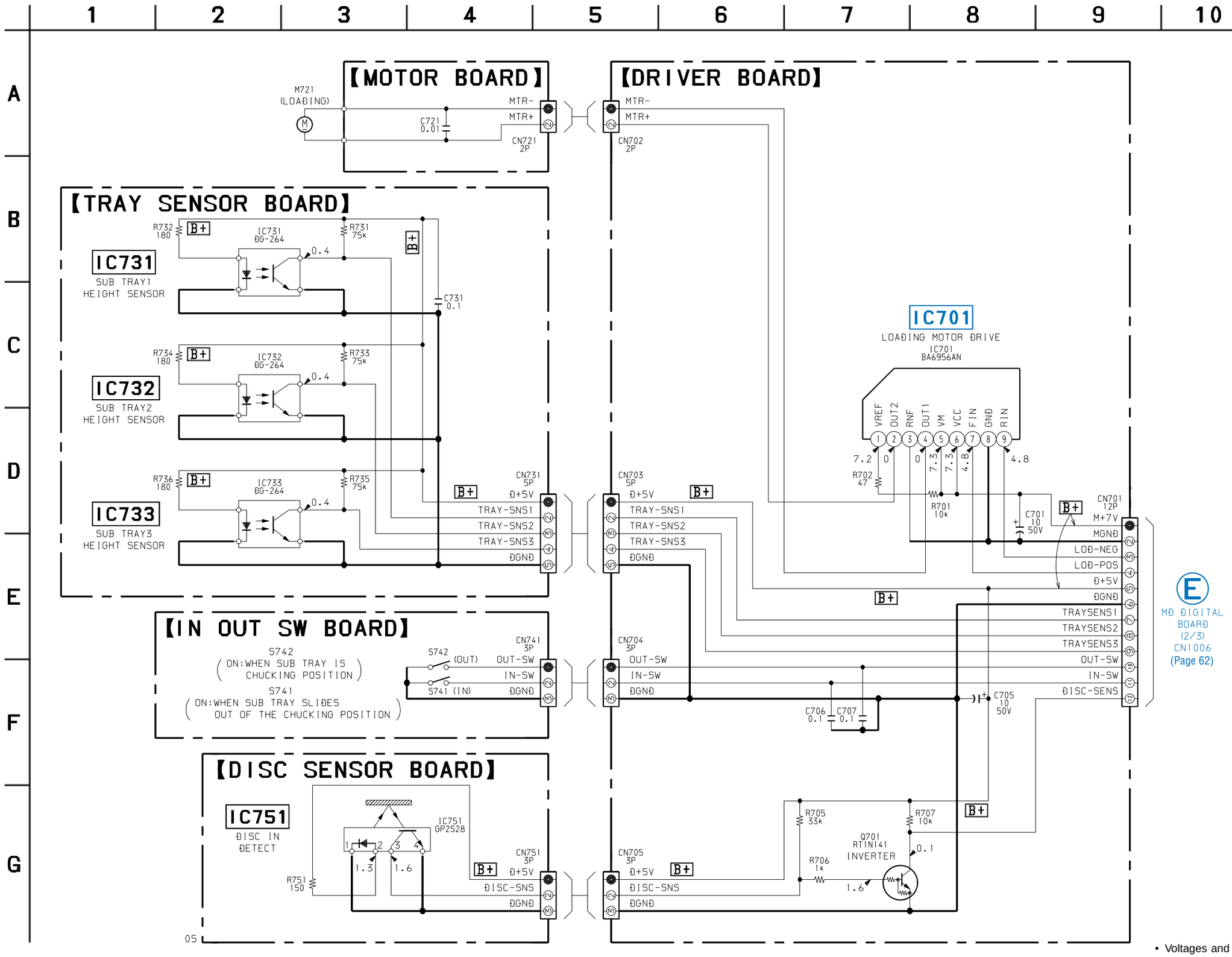


【DISC SENSOR BOARD】



There are a few cases that the part isn't mounted in model is printed on diagrams.

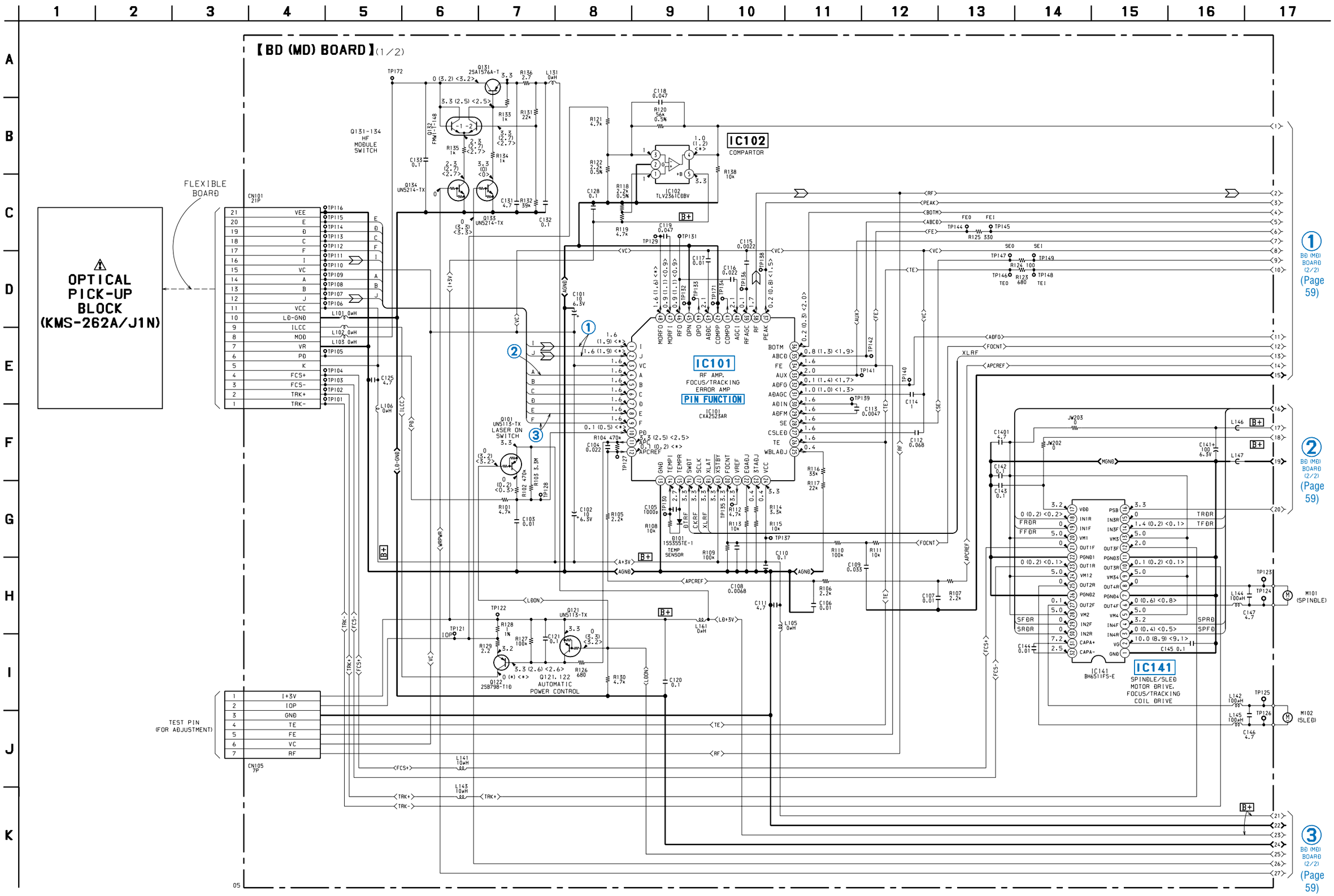
6-9. SCHEMATIC DIAGRAM – CD CHANGER Section – • See page 80 for IC Block Diagram.



• Voltages and waveforms are dc with respect to ground under no-signal conditions.
no mark : CD STOP

6-10. SCHEMATIC DIAGRAM – BD (MD) Board (1/2) –

• See page 69 for Waveforms. • See page 80 for IC Block Diagrams.



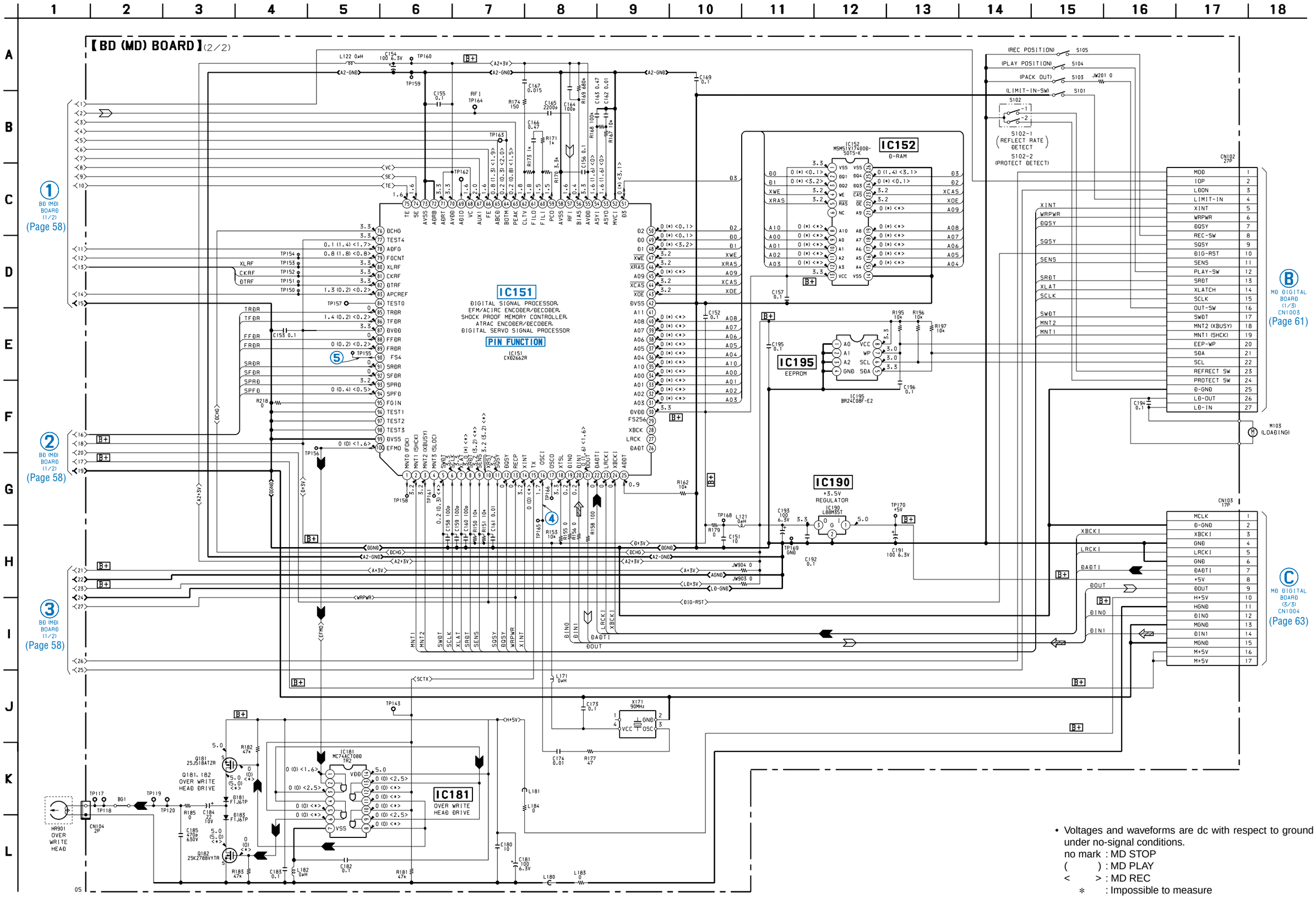
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : MD STOP
  ( ) : MD PLAY
  < > : MD REC
  * : Impossible to measure

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

以阴影和⚠标志来识别的零部件在安全方面具有关键性。因此只能以规定号码的零部件来更换。

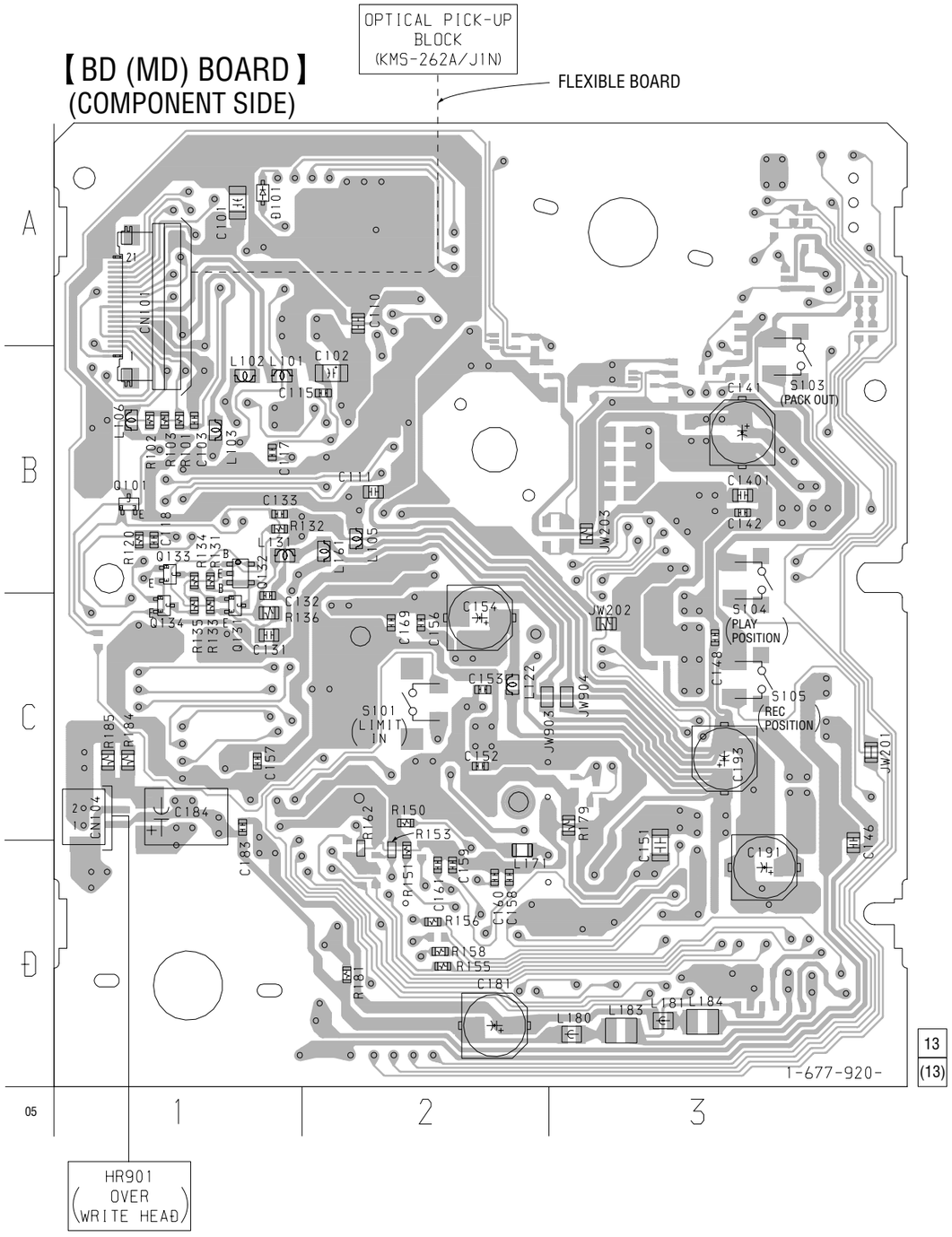
6-11. SCHEMATIC DIAGRAM – BD (MD) Board (2/2) –

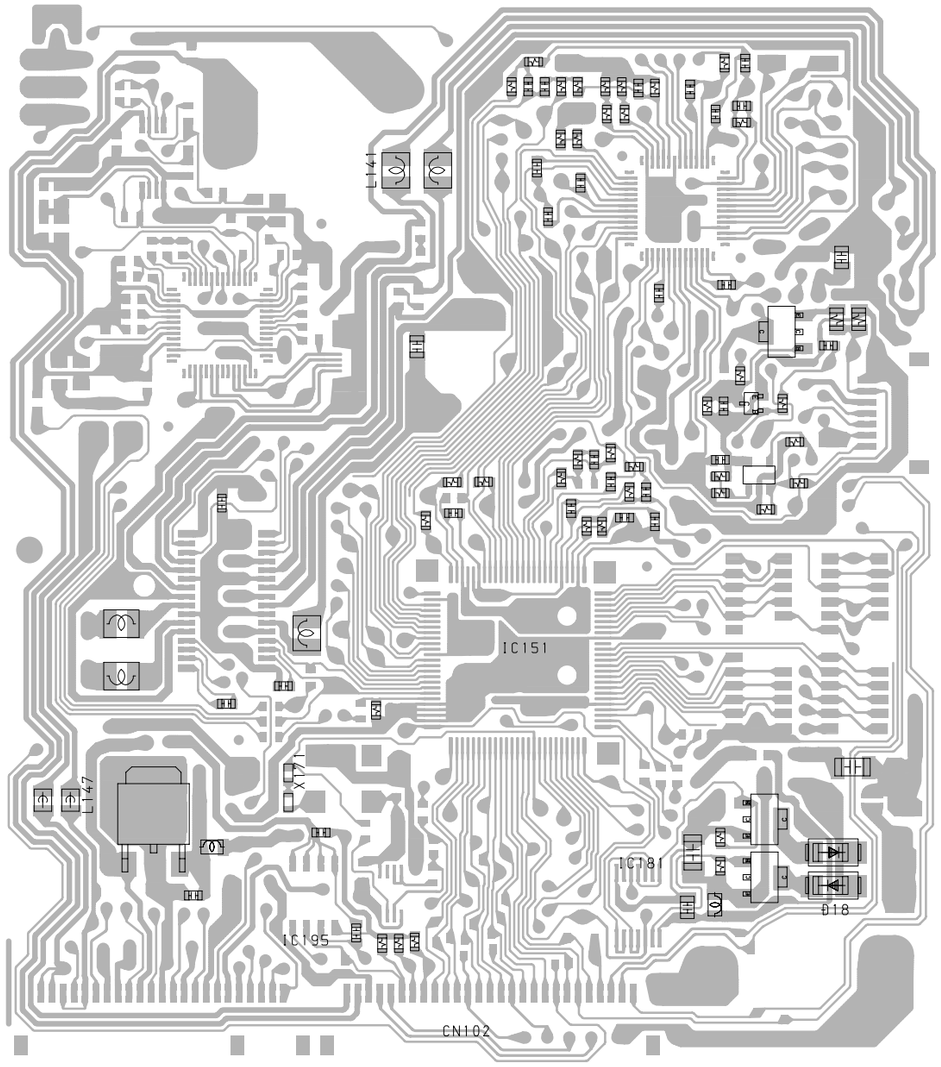
• See page 69 for Waveforms. • See page 80 for IC Block Diagram.



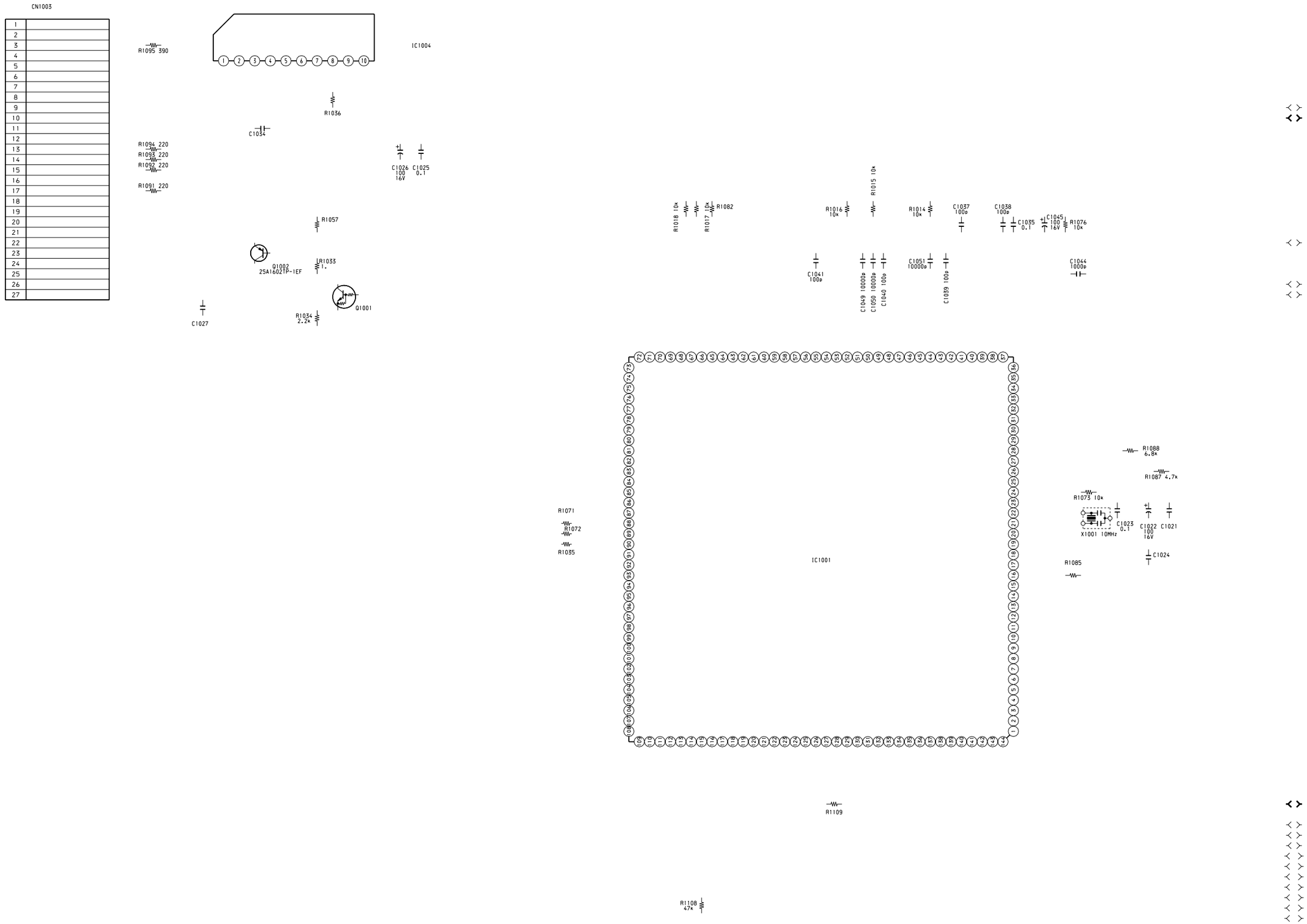
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : MD STOP
  ( ) : MD PLAY
  < > : MD REC
  * : Impossible to measure

【BD (MD) BOARD】
(COMPONENT SIDE)



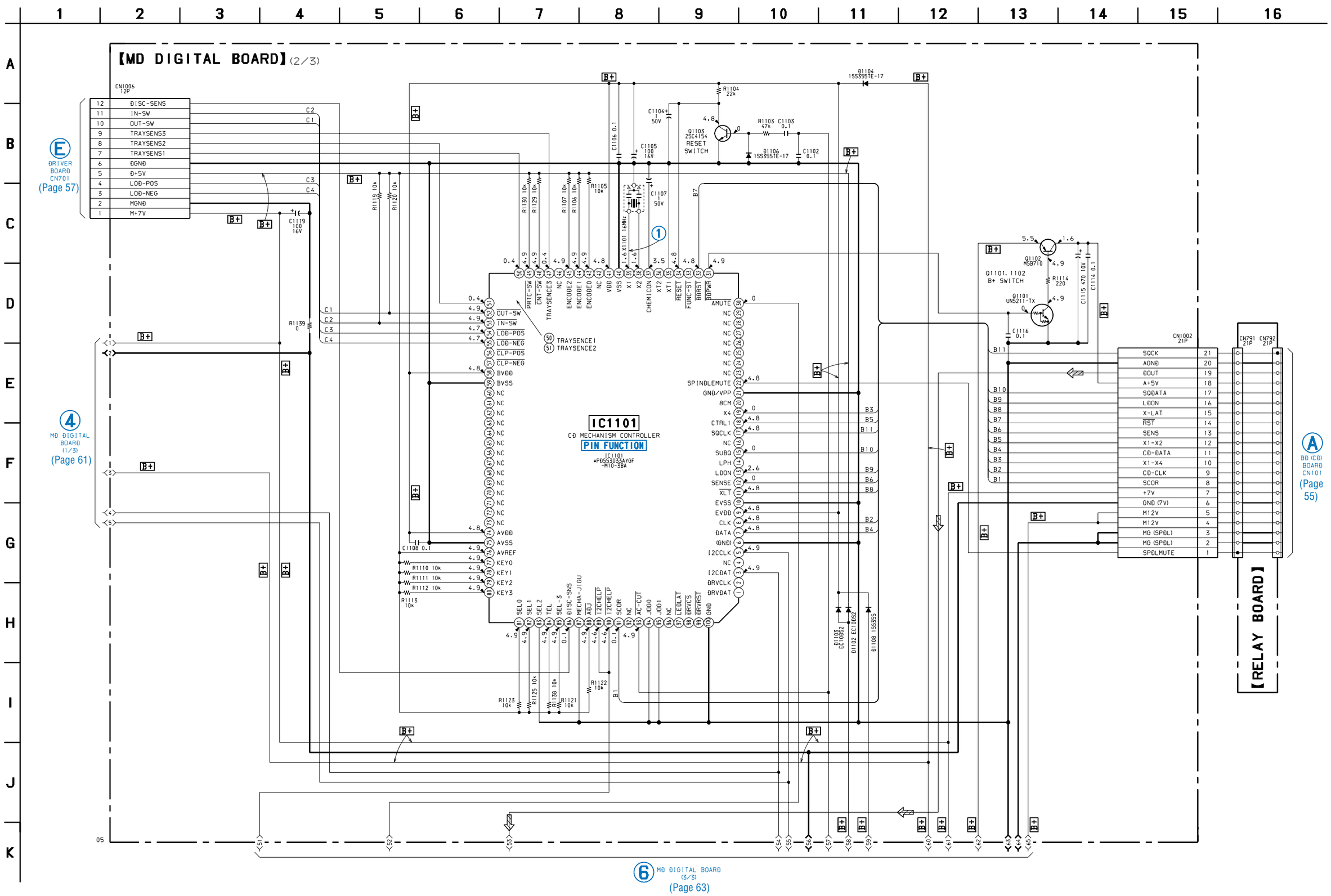


6-13. SCHEMATIC DIAGRAM – MD DIGITAL Board (1/3) – • See page 69 for Waveform. • See page 80 for IC Block Diagram.



• Voltages and waveforms are dc with respect to ground under no-signal conditions.
no mark : MD STOP

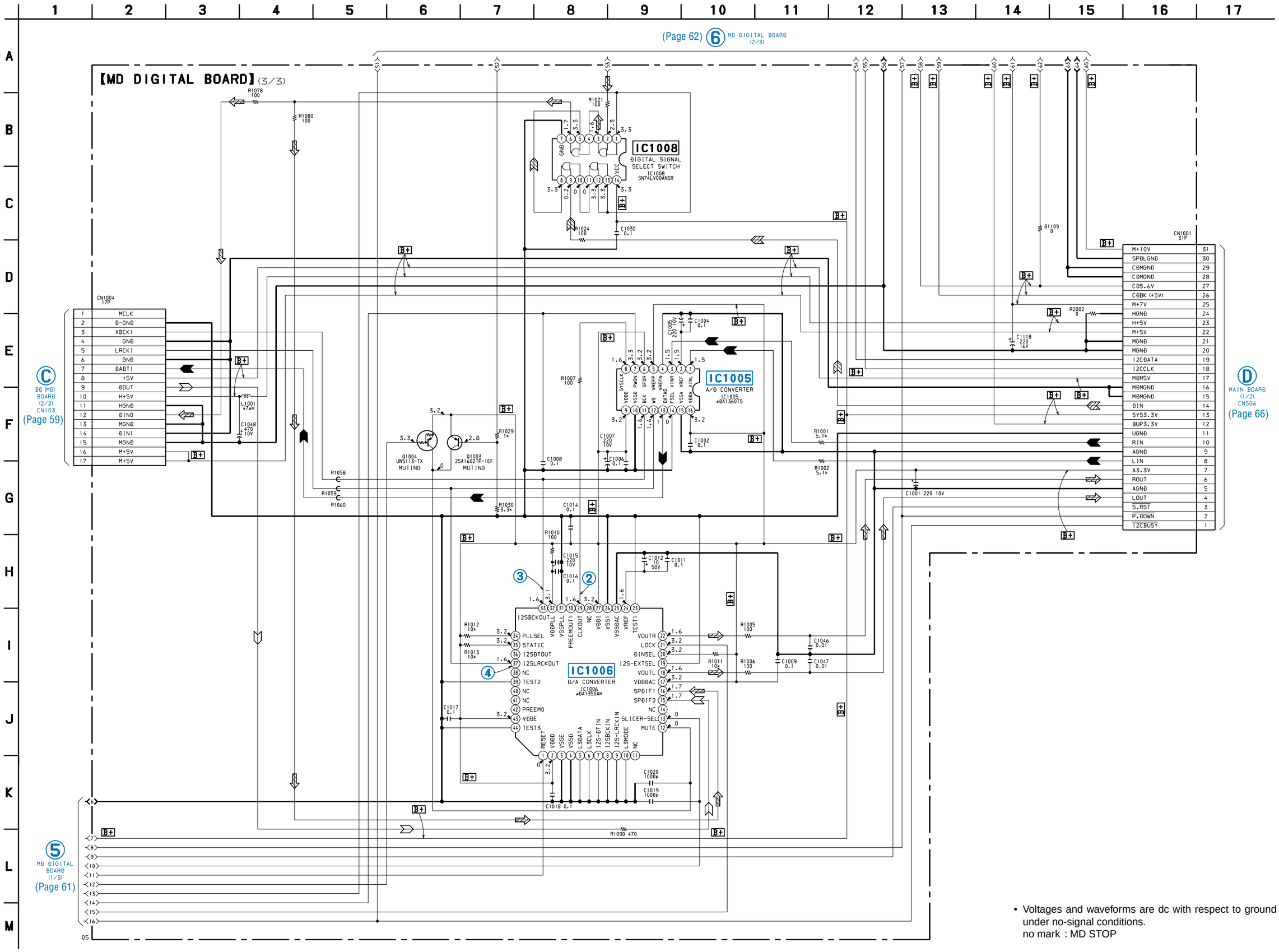
6-14. SCHEMATIC DIAGRAM – MD DIGITAL (2/3)/RELAY Boards – • See page 69 for Waveform.



• Voltages and waveforms are dc with respect to ground under no-signal conditions.
no mark : CD STOP

6-15. SCHEMATIC DIAGRAM – MD DIGITAL Board (3/3) –

• See page 69 for Waveforms. • See page 80 for IC Block Diagrams.



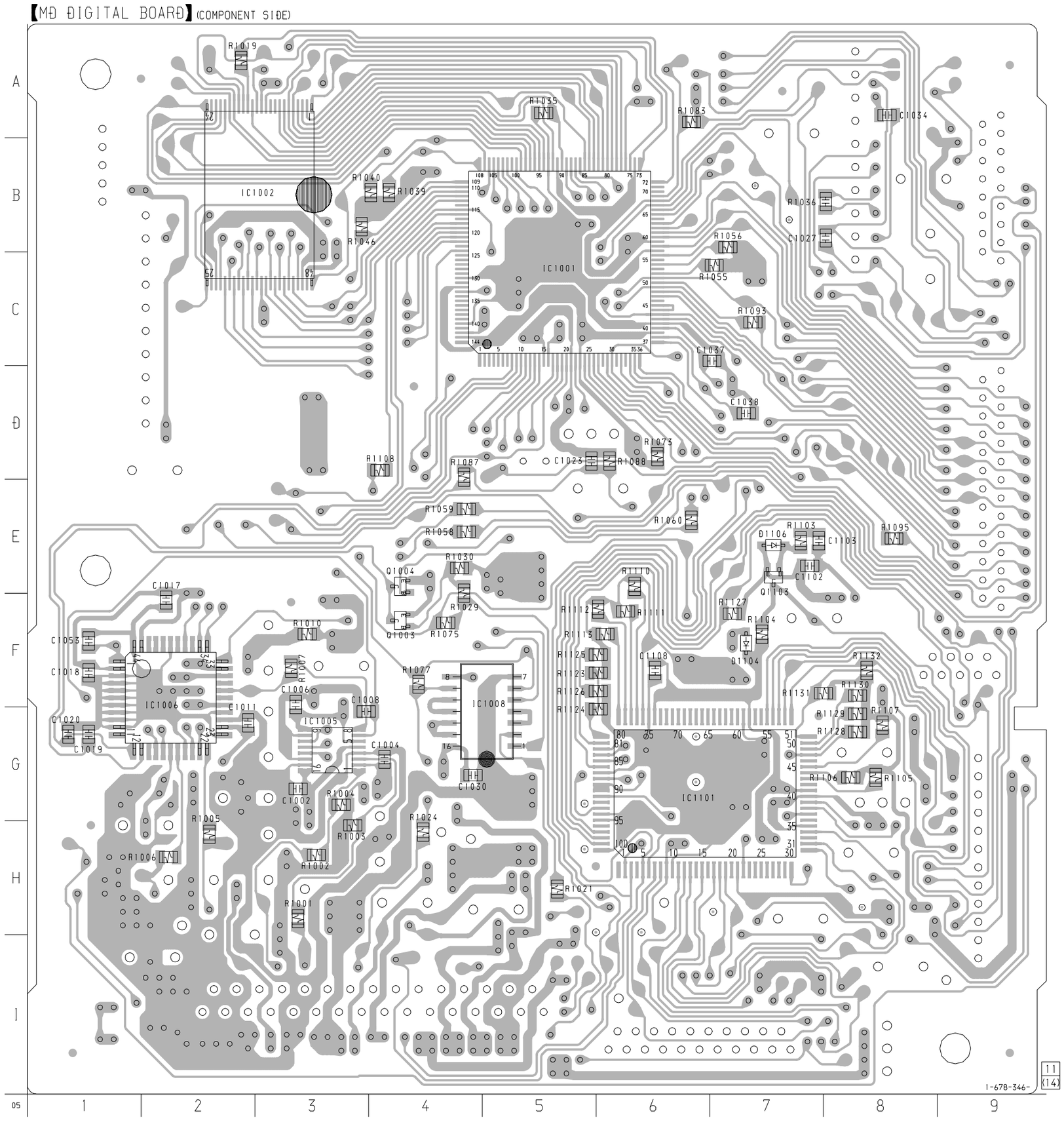
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
  no mark : MD STOP

6-16. PRINTED WIRING BOARD – MD DIGITAL Board (Component Side) –

• See page 53 for Circuit Boards Location.

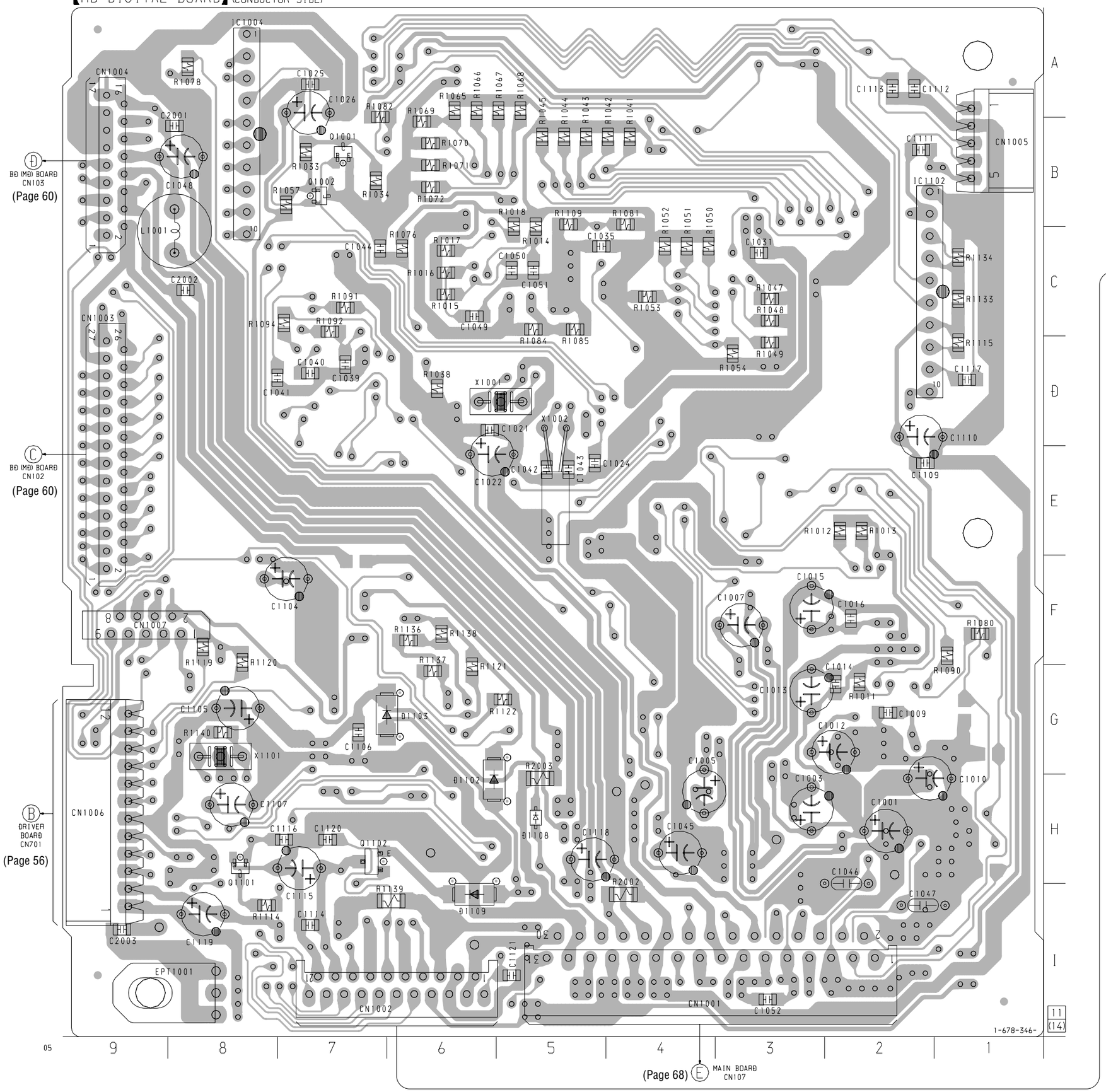
• **Semiconductor Location**

Ref. No.	Location
D1104	F-7
D1106	E-7
IC1001	C-5
IC1005	G-3
IC1006	F-2
IC1008	G-5
IC1101	G-6
Q1003	F-4
Q1004	E-4
Q1103	E-7



There are a few cases that the part isn't mounted in model is printed on diagrams.

【MD DIGITAL BOARD】(CONDUCTOR SIDE)



(Page 60) Ð BD (MD) BOARD CN103

(Page 60) C BD (MD) BOARD CN102

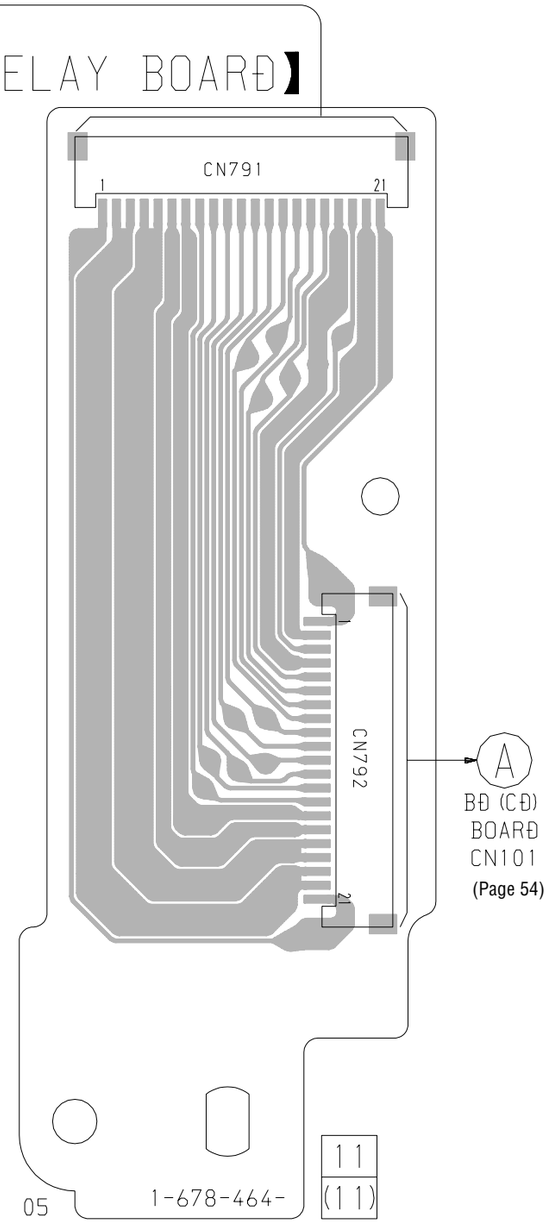
(Page 56) B DRIVER BOARD CN701

(Page 68) E MAIN BOARD CN107

- **Semiconductor Location**

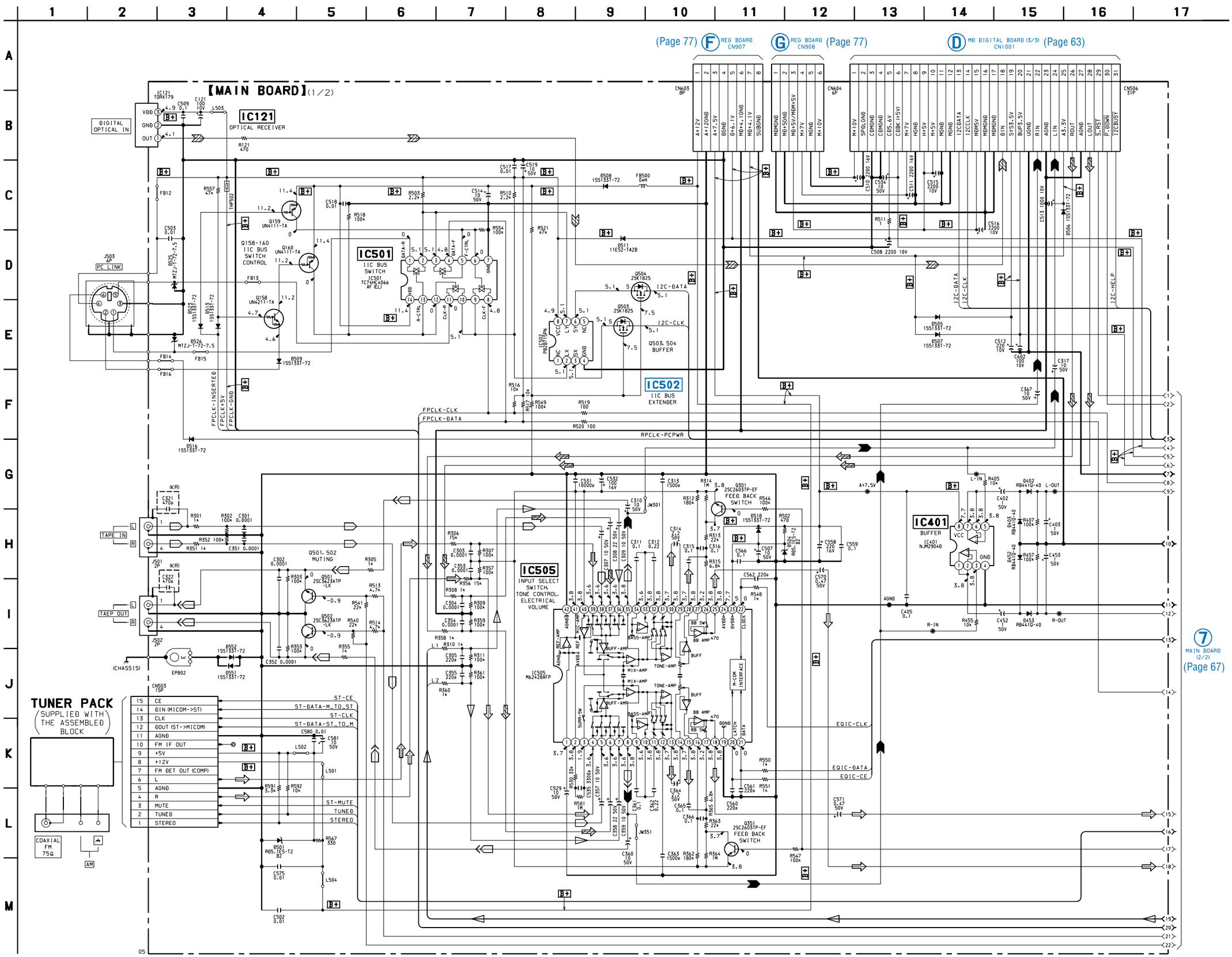
Ref. No.	Location
D1102	H-6
D1103	G-7
D1108	H-5
IC1004	B-8
Q1001	B-7
Q1002	B-7
Q1101	H-8
Q1102	H-7

【RELAY BOARD】



There are a few cases that the part isn't mounted in model is printed on diagrams.

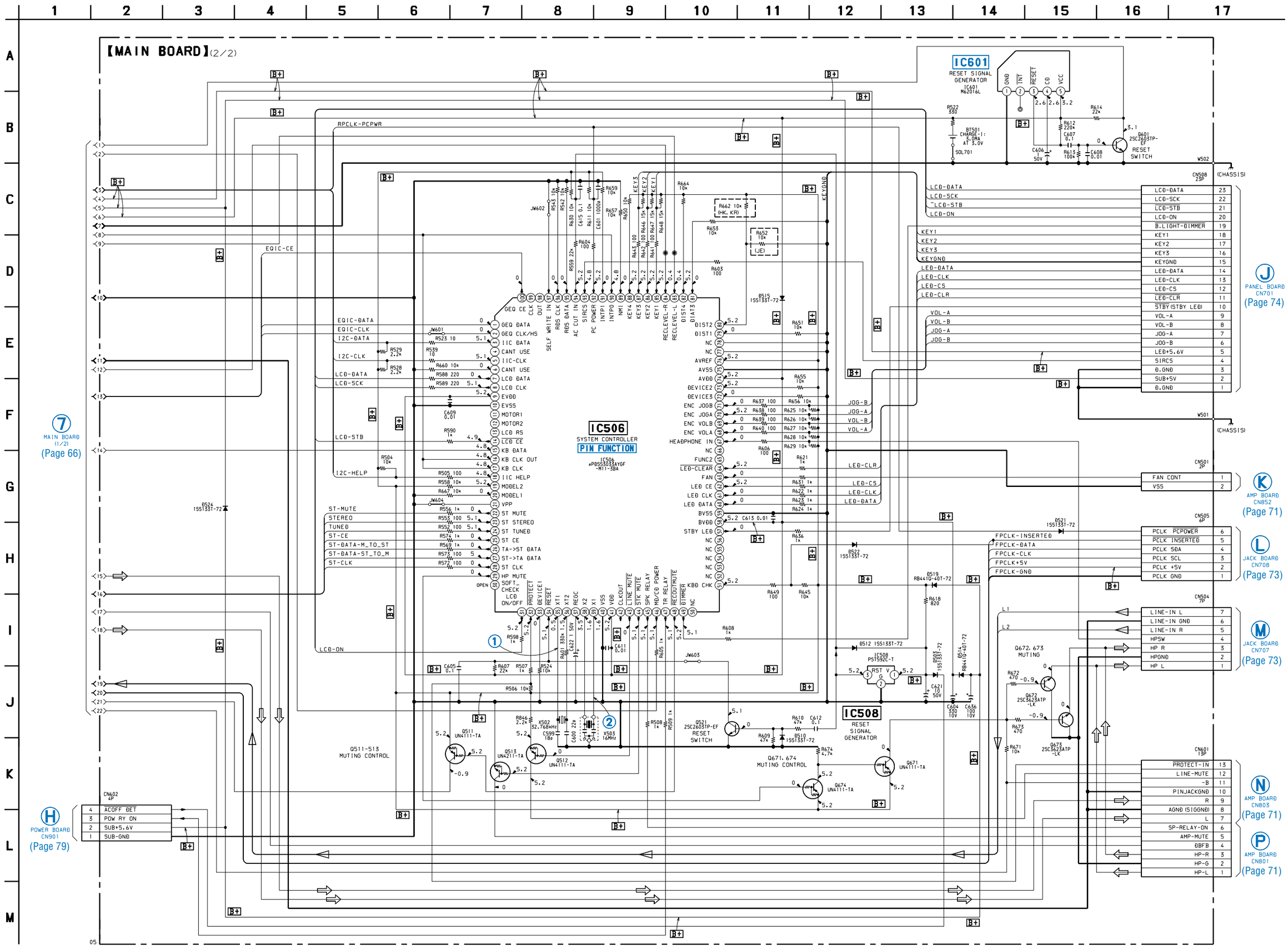
6-18. SCHEMATIC DIAGRAM – MAIN Board (1/2) – • See page 80 for IC Block Diagram.



• Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
no mark : FM

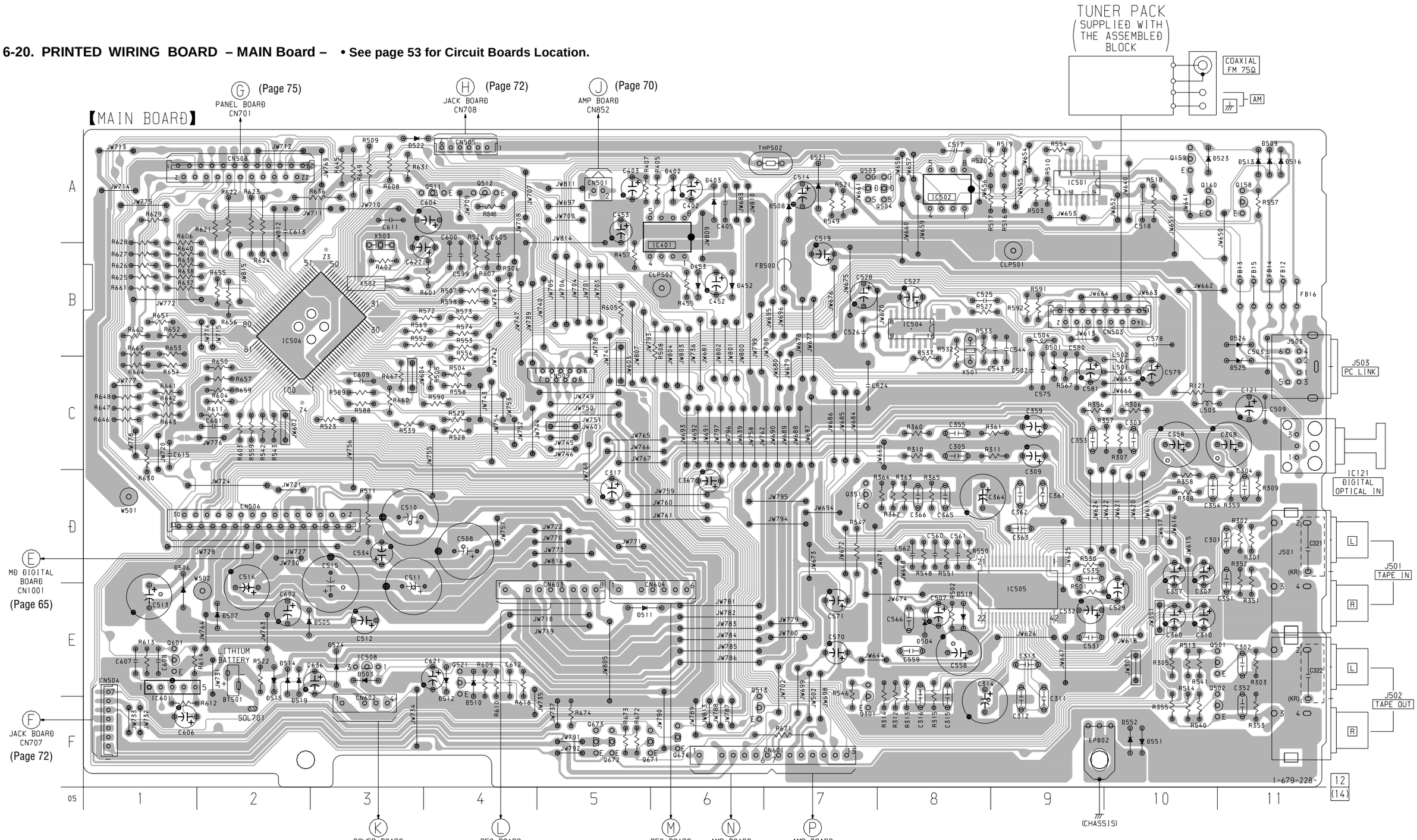
6-19. SCHEMATIC DIAGRAM – MAIN Board (2/2) –

• See page 69 for Waveforms. • See page 80 for IC Block Diagram.



- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM

6-20. PRINTED WIRING BOARD – MAIN Board – • See page 53 for Circuit Boards Location.



There are a few cases that the part isn't mounted in model is printed on diagrams.

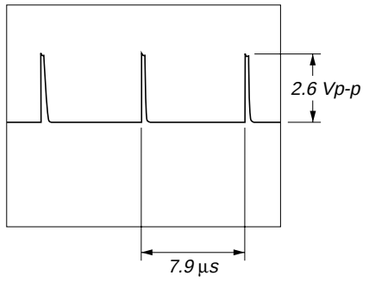
- **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D402	A-6	D513	A-11	IC121	C-11	Q502	F-11
D403	A-6	D514	E-2	IC401	A-6	Q503	A-7
D452	B-6	D515	E-2	IC501	A-9	Q504	A-8
D453	B-6	D516	A-11	IC502	A-8	Q511	A-4
D501	C-9	D518	E-8	IC505	E-9	Q512	A-4
D503	E-3	D519	E-2	IC506	B-3	Q513	F-6
D504	E-8	D521	A-7	IC508	E-3	Q521	E-4
D505	E-2	D522	A-3	IC601	E-1	Q601	E-1
D506	E-1	D523	A-10			Q671	F-5
D507	E-2	D524	E-3	Q158	A-11	Q672	F-5
D508	A-7	D525	C-11	Q159	A-10	Q673	F-5
D509	A-11	D526	B-11	Q160	A-10	Q674	F-6
D510	E-4	D551	F-10	Q301	E-7		
D511	E-5	D552	F-10	Q351	D-7		
D512	E-4			Q501	E-11		

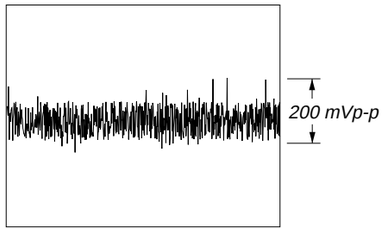
• **Waveforms**

– BD (CD) Board –

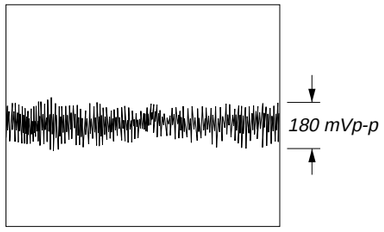
❶ IC101 ㉕ (MDP) (CD Play Mode)



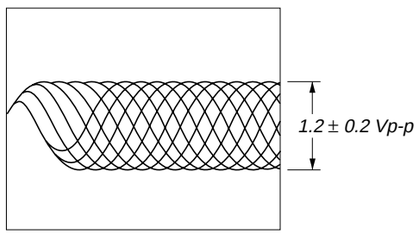
❷ IC101 ㊴ (FE) (CD Play Mode)



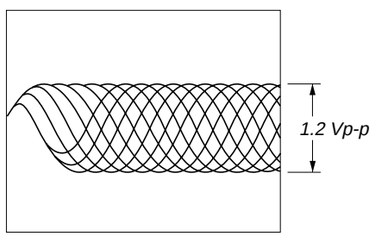
❸ IC101 ㊶ (TE) (CD Play Mode)



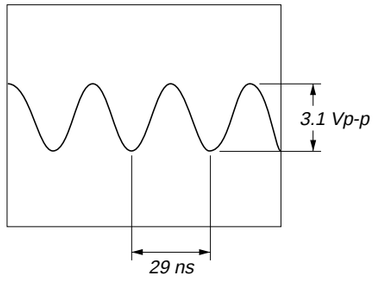
❹ IC101 ㊸ (RFDC) (CD Play Mode)



❺ IC101 ㊿ (RFAC) (CD Play Mode)

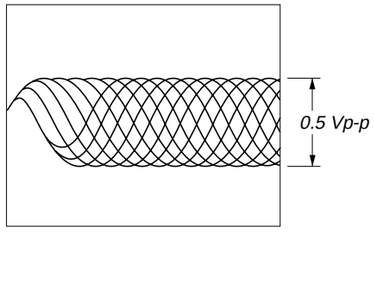


❻ IC101 ㉜ (XTAO)

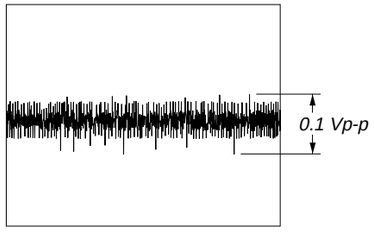


– BD (MD) Board –

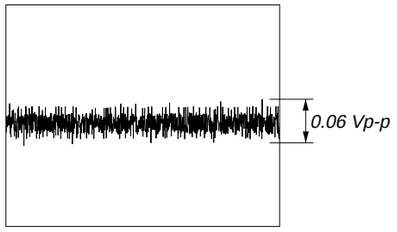
❶ IC101 ① (I), ② (J) (MD Play Mode)



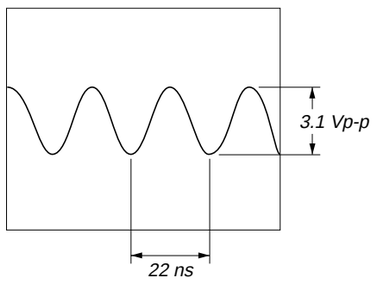
❷ IC101 ④ (A) (MD Play Mode)



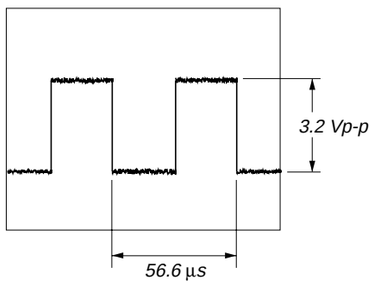
❸ IC101 ⑧ (E), ⑨ (F) (MD Play Mode)



❹ IC151 ⑯ (OSCI)

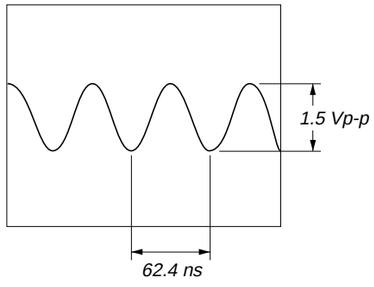


❺ IC151 ㊿ (FS4)

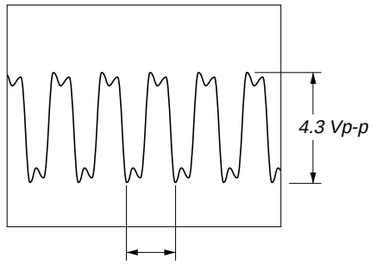


– MD DIGITAL Board –

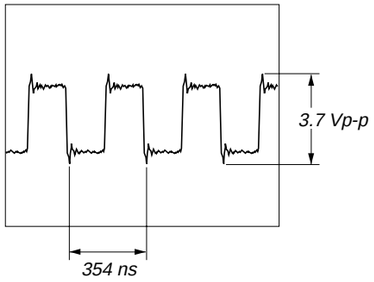
❶ IC1101 ㊴ (X1)



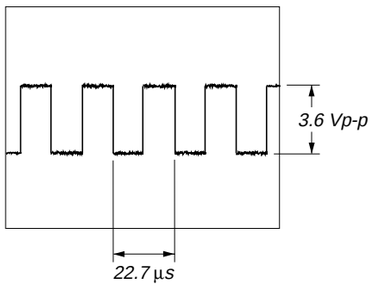
❷ IC1006 ㉙ (CLKOUT)



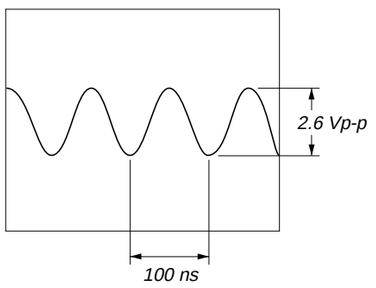
❸ IC1006 ㉝ (I2SBCKOUT)



❹ IC1006 ㊲ (I2SLRCKOUT)

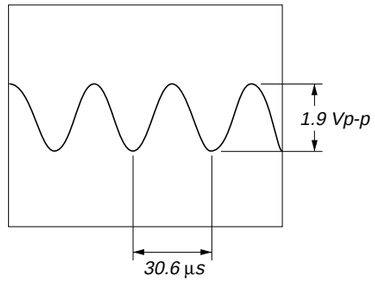


❺ IC1001 ㉒ (XIN)

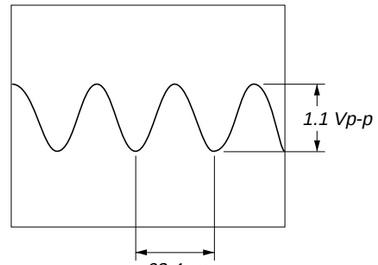


– MAIN Board –

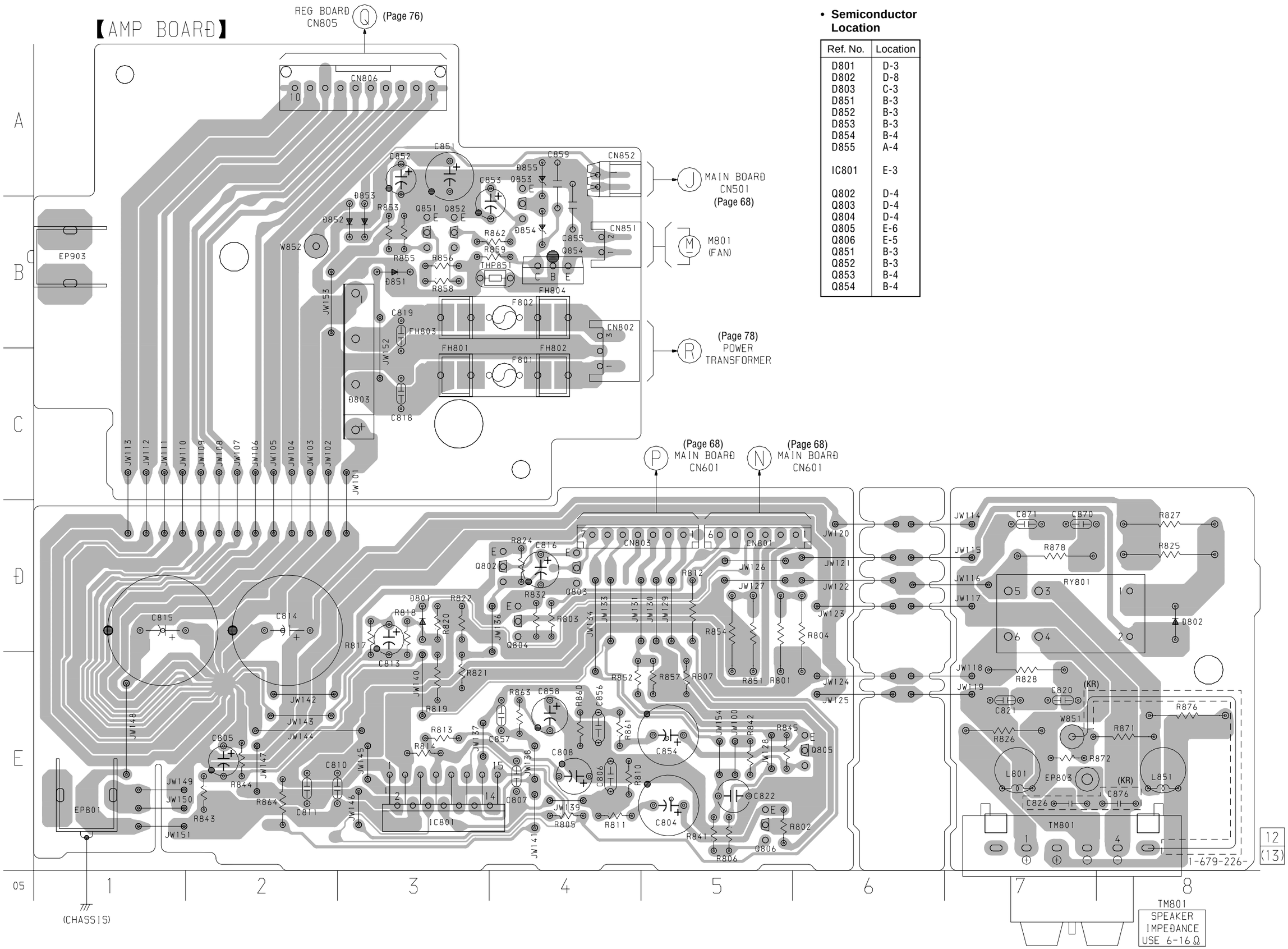
❶ IC506 ㉟ (XT1)



❷ IC506 ㊴ (X1)



6-21. PRINTED WIRING BOARD – AMP Board – • See page 53 for Circuit Boards Location.

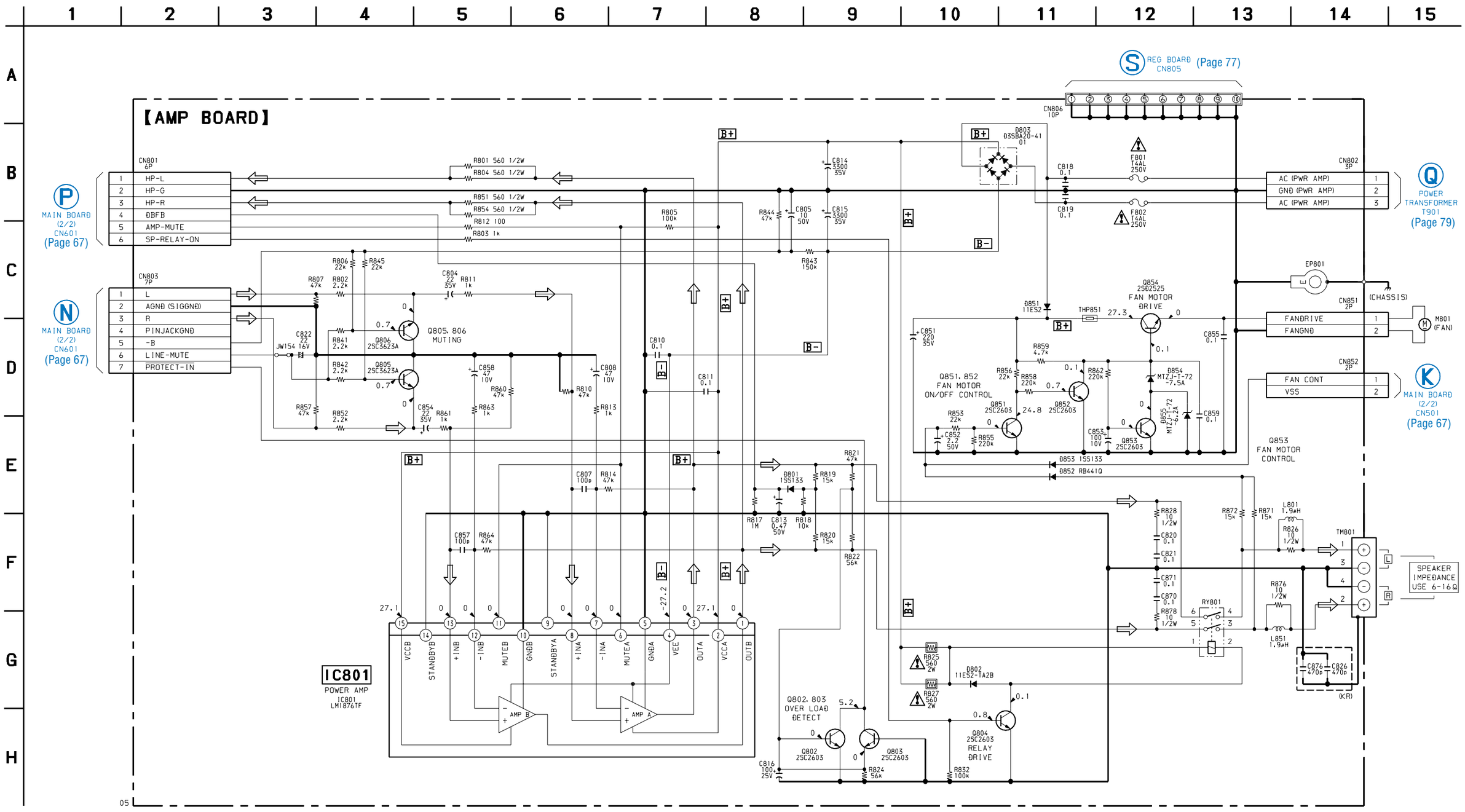


- **Semiconductor Location**

Ref. No.	Location
D801	D-3
D802	D-8
D803	C-3
D851	B-3
D852	B-3
D853	B-3
D854	B-4
D855	A-4
IC801	E-3
Q802	D-4
Q803	D-4
Q804	D-4
Q805	E-6
Q806	E-5
Q851	B-3
Q852	B-3
Q853	B-4
Q854	B-4

There are a few cases that the part isn't mounted in model is printed on diagrams.

6-22. SCHEMATIC DIAGRAM – AMP Board –

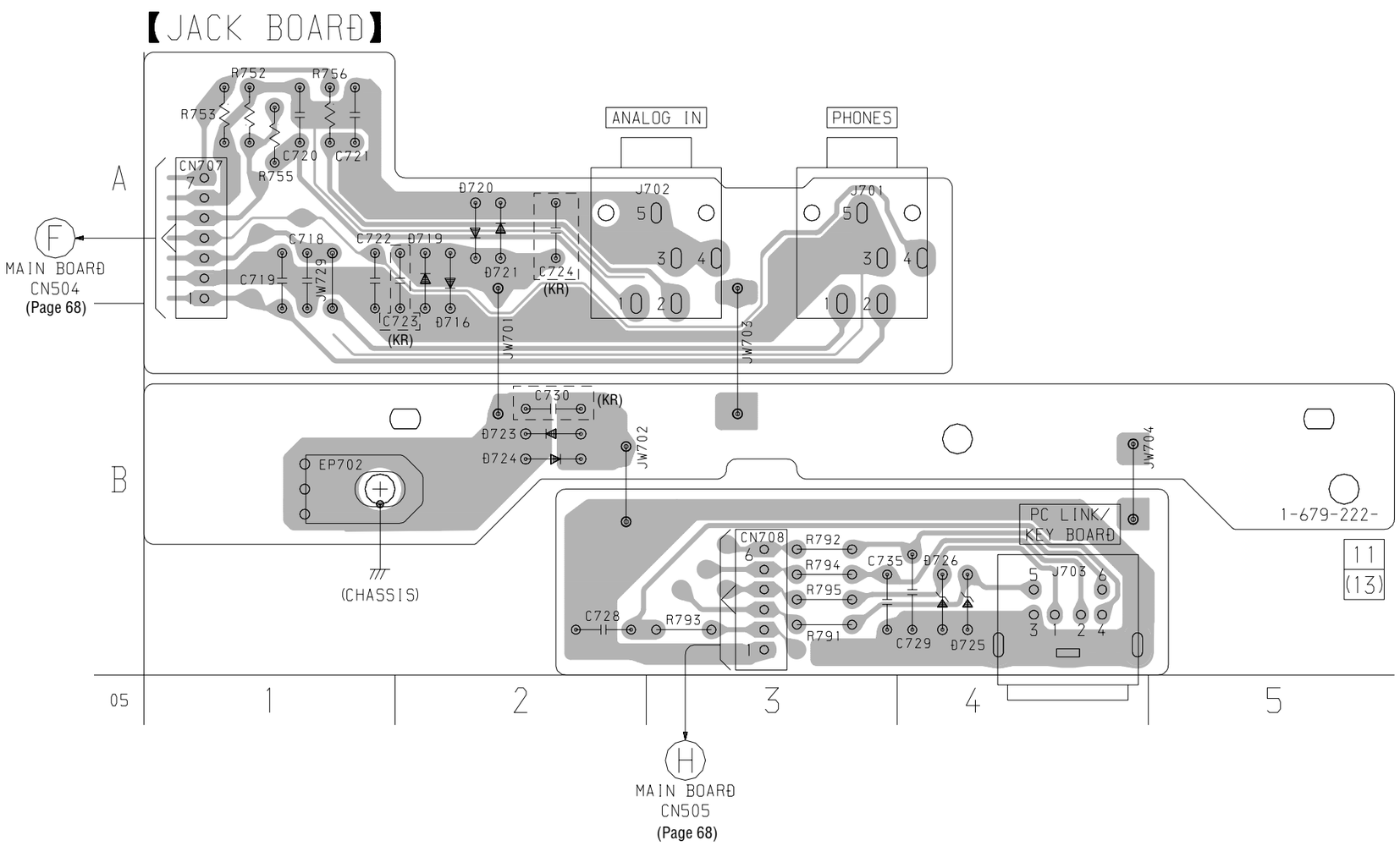


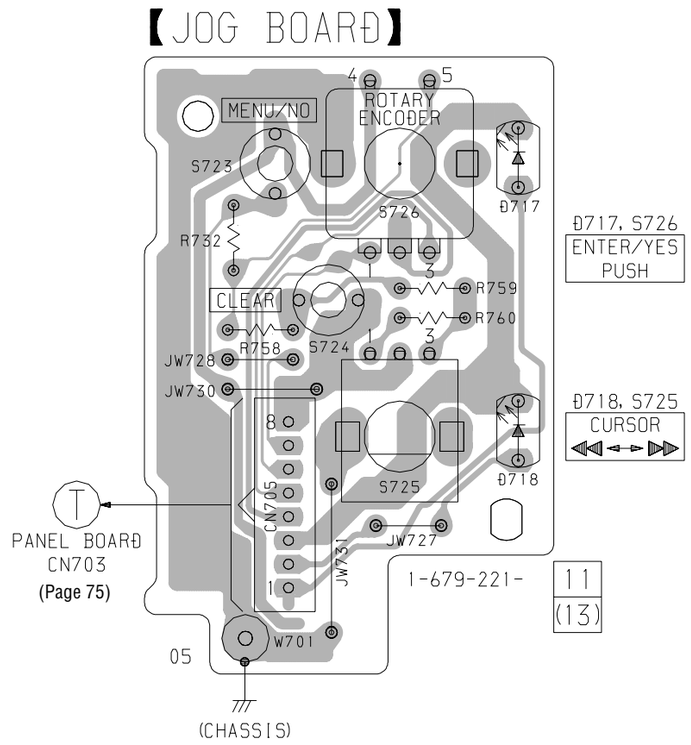
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

以阴影和⚠标志来识别的零部件在安全方面具有关键性。因此只能以规定号码的零部件来更换。

6-23. PRINTED WIRING BOARDS – JACK/JOG Boards – • See page 53 for Circuit Boards Location.



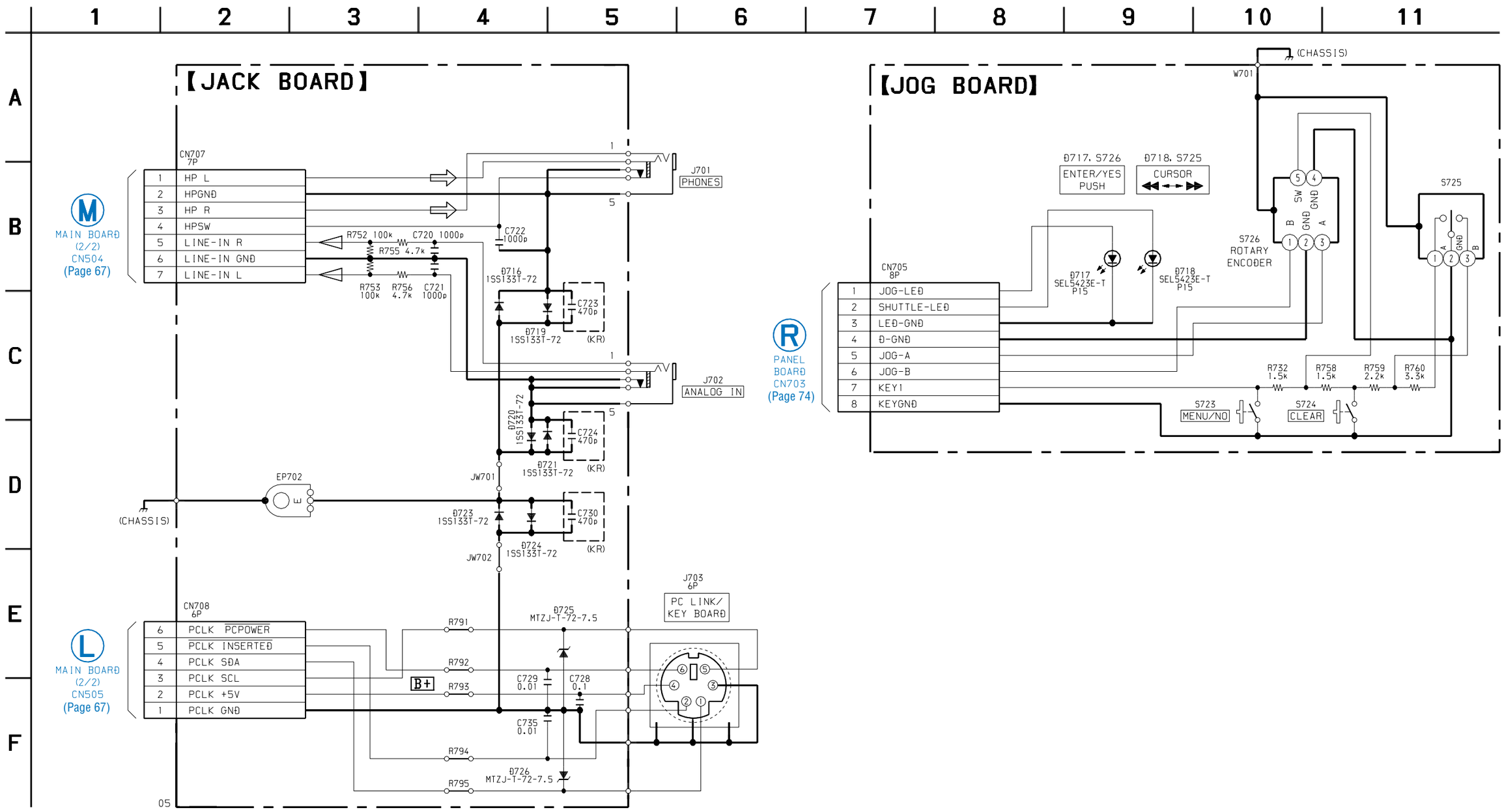


- **Semiconductor Location**

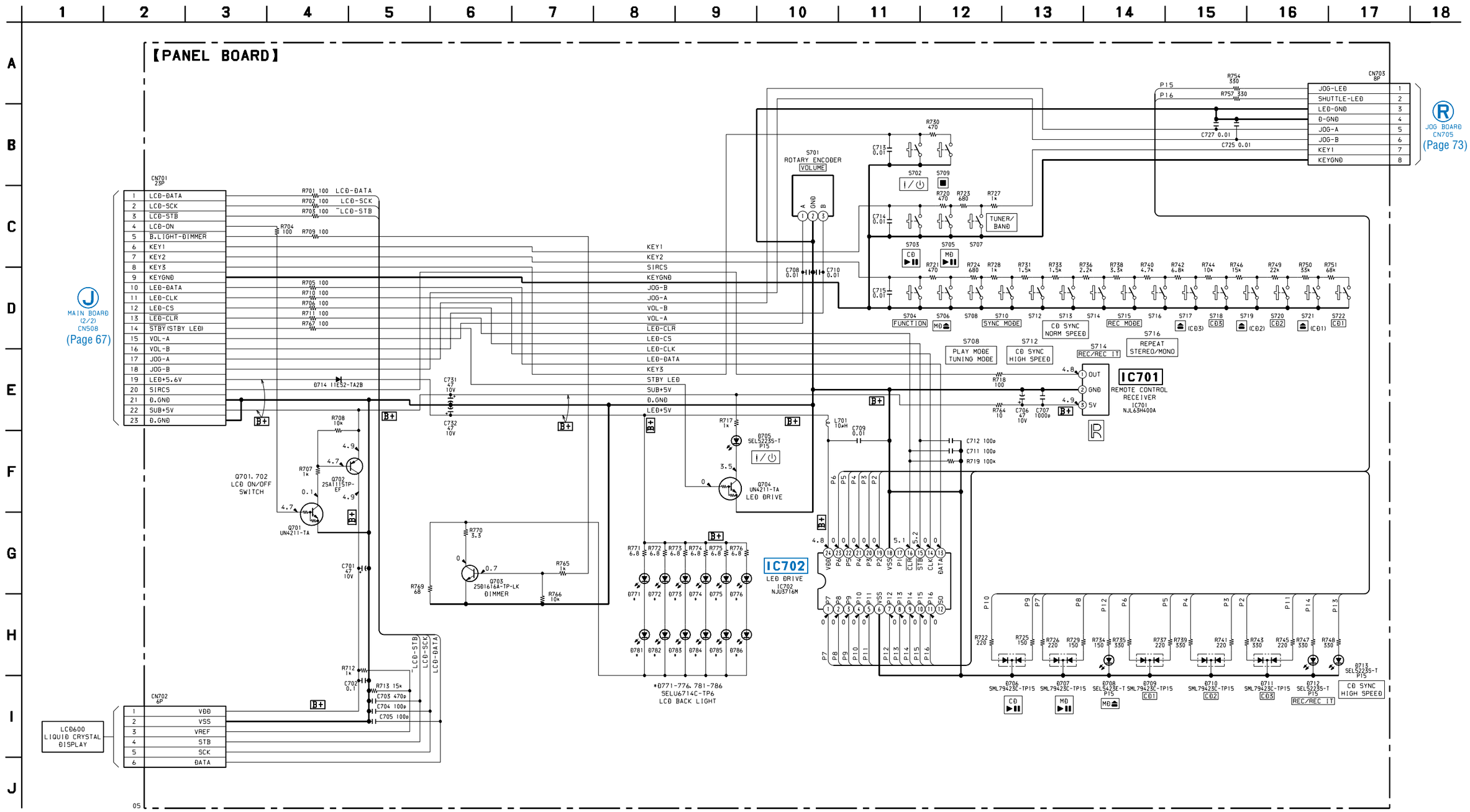
Ref. No.	Location
D716	A-2
D719	A-2
D720	A-2
D721	A-2
D723	B-2
D724	B-2
D725	B-4
D726	B-4

There are a few cases that the part isn't mounted in model is printed on diagrams.

6-24. SCHEMATIC DIAGRAM – JACK/JOG Boards –

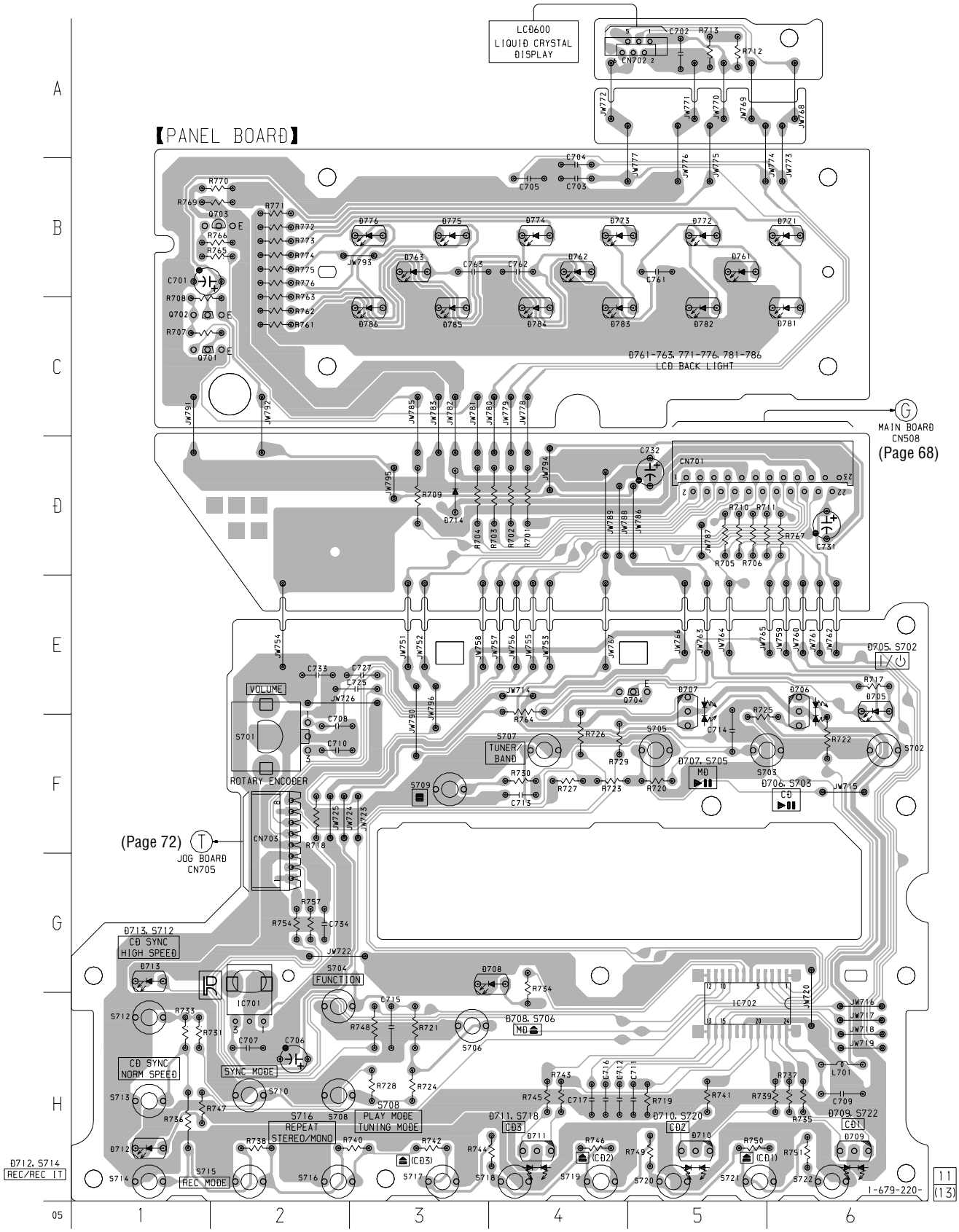


6-25. SCHEMATIC DIAGRAM – PANEL Board – • See page 80 for IC Block Diagram.



- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM

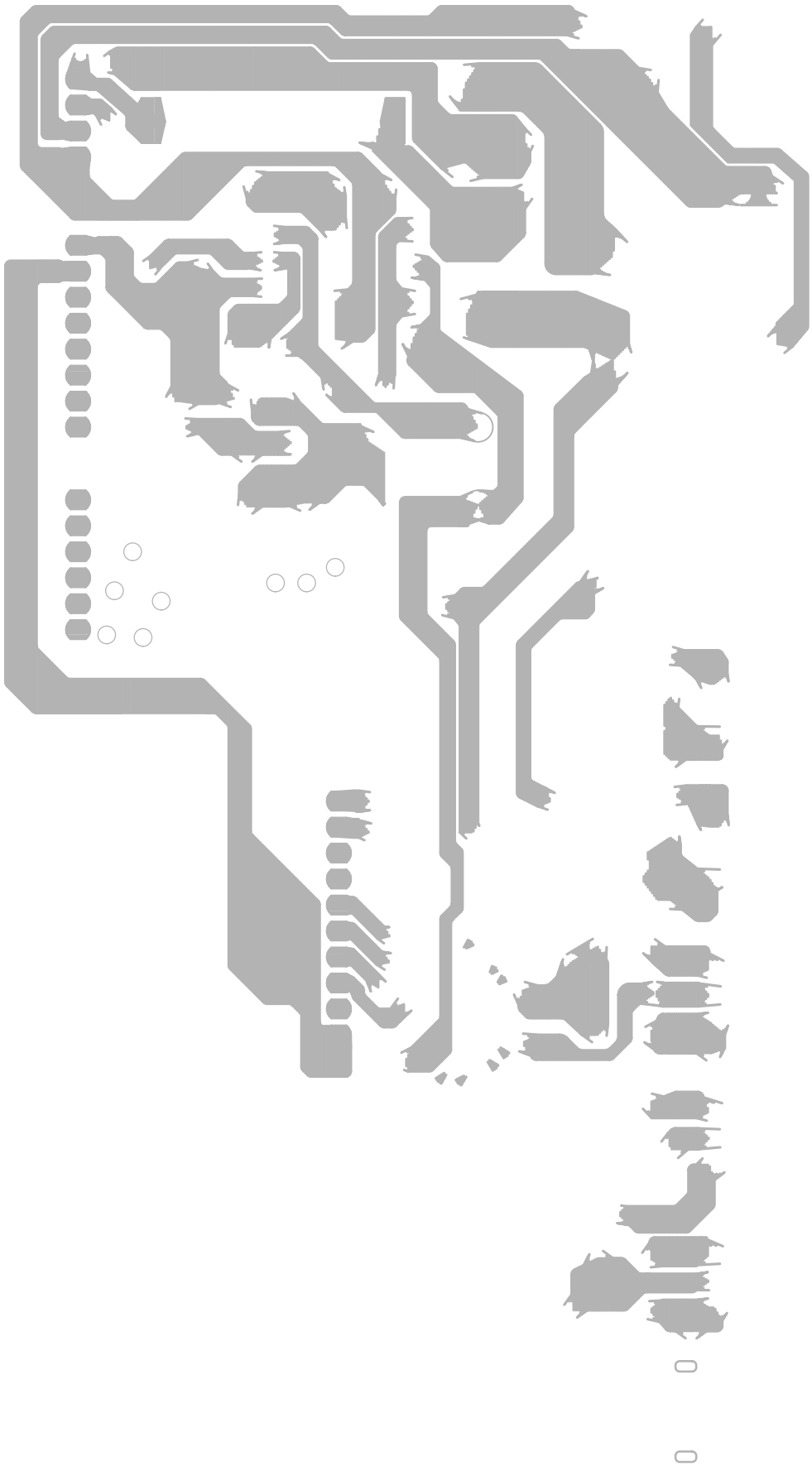
6-26. PRINTED WIRING BOARD – PANEL Board – • See page 53 for Circuit Boards Location.



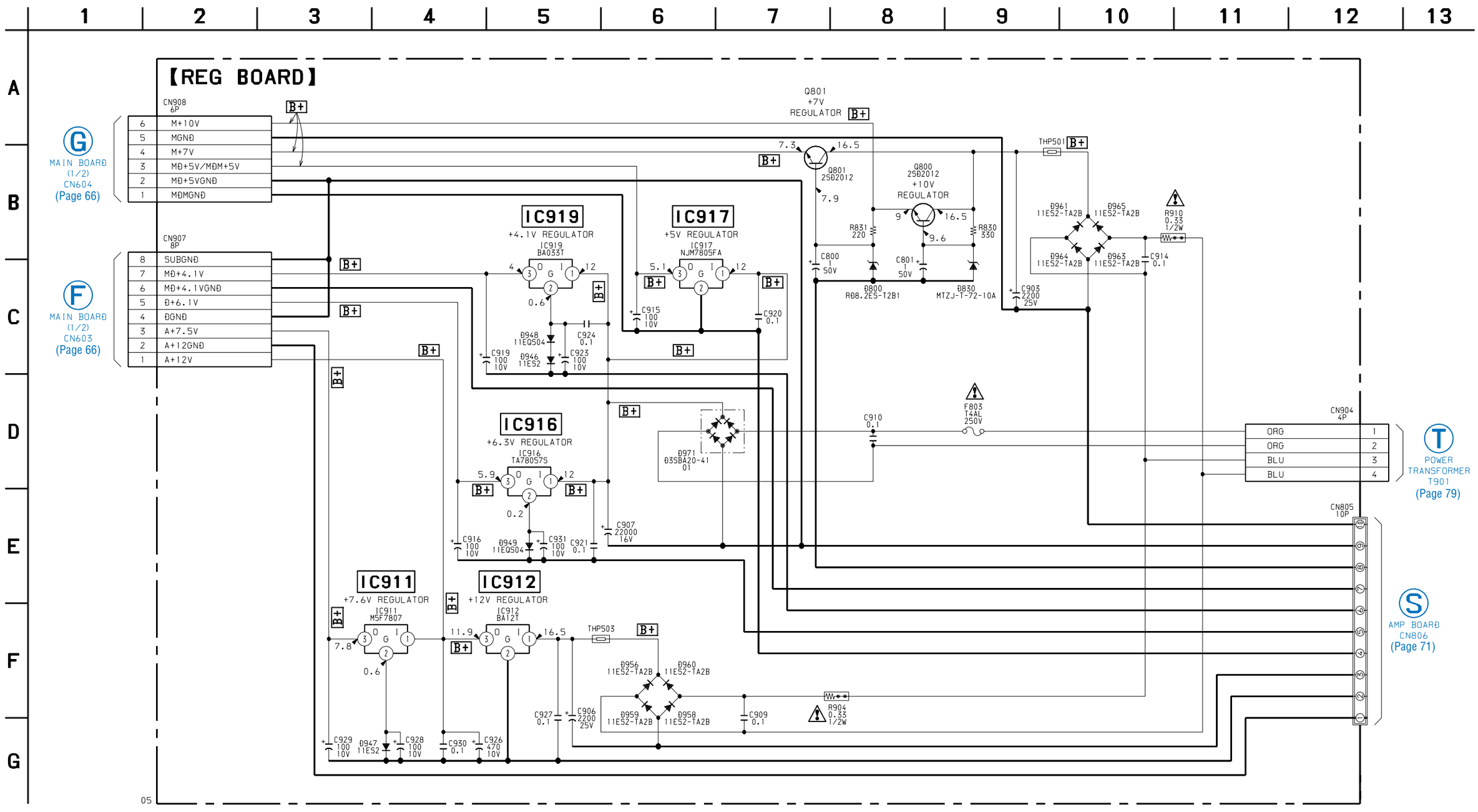
• **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
D705	E-6	D771	B-6	D785	C-3
D706	E-6	D772	B-5	D786	C-3
D707	E-5	D773	B-4		
D708	G-4	D774	B-4	IC701	G-2
D709	H-6	D775	B-3	IC702	H-5
D710	H-5	D776	B-3		
D711	H-4	D781	C-6	Q701	C-1
D712	H-1	D782	C-5	Q702	C-1
D713	G-1	D783	C-4	Q703	B-2
D714	D-3	D784	C-4	Q704	E-5

There are a few cases that the part isn't mounted in model is printed on diagrams.



6-28. SCHEMATIC DIAGRAM – REG Board –



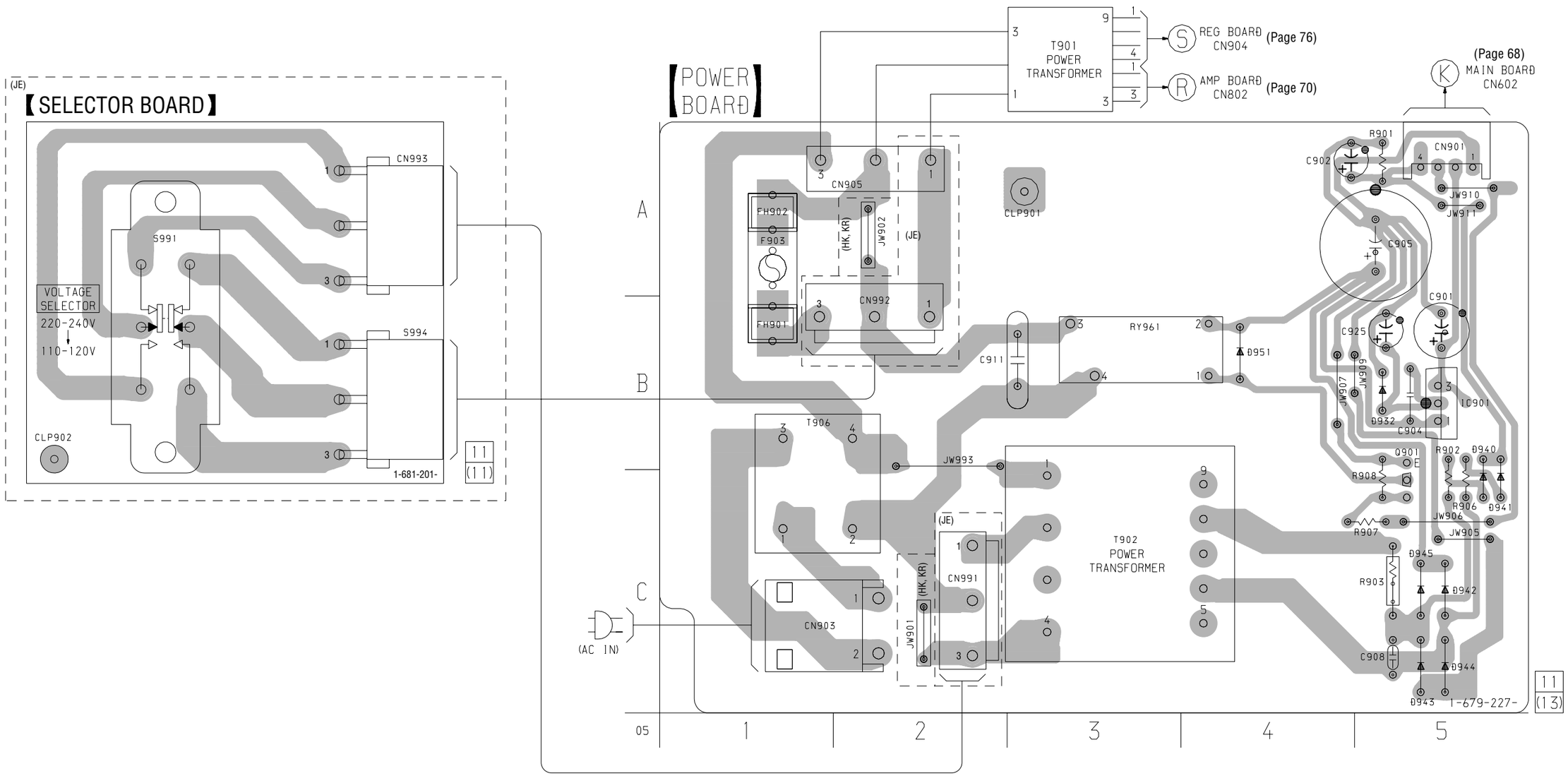
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

以阴影和⚠标志来识别的零部件在安全方面具有关键性。因此只能以规定号码的零部件来更换。

6-29. PRINTED WIRING BOARDS – POWER/SELECTOR Boards –

• See page 53 for Circuit Boards Location.

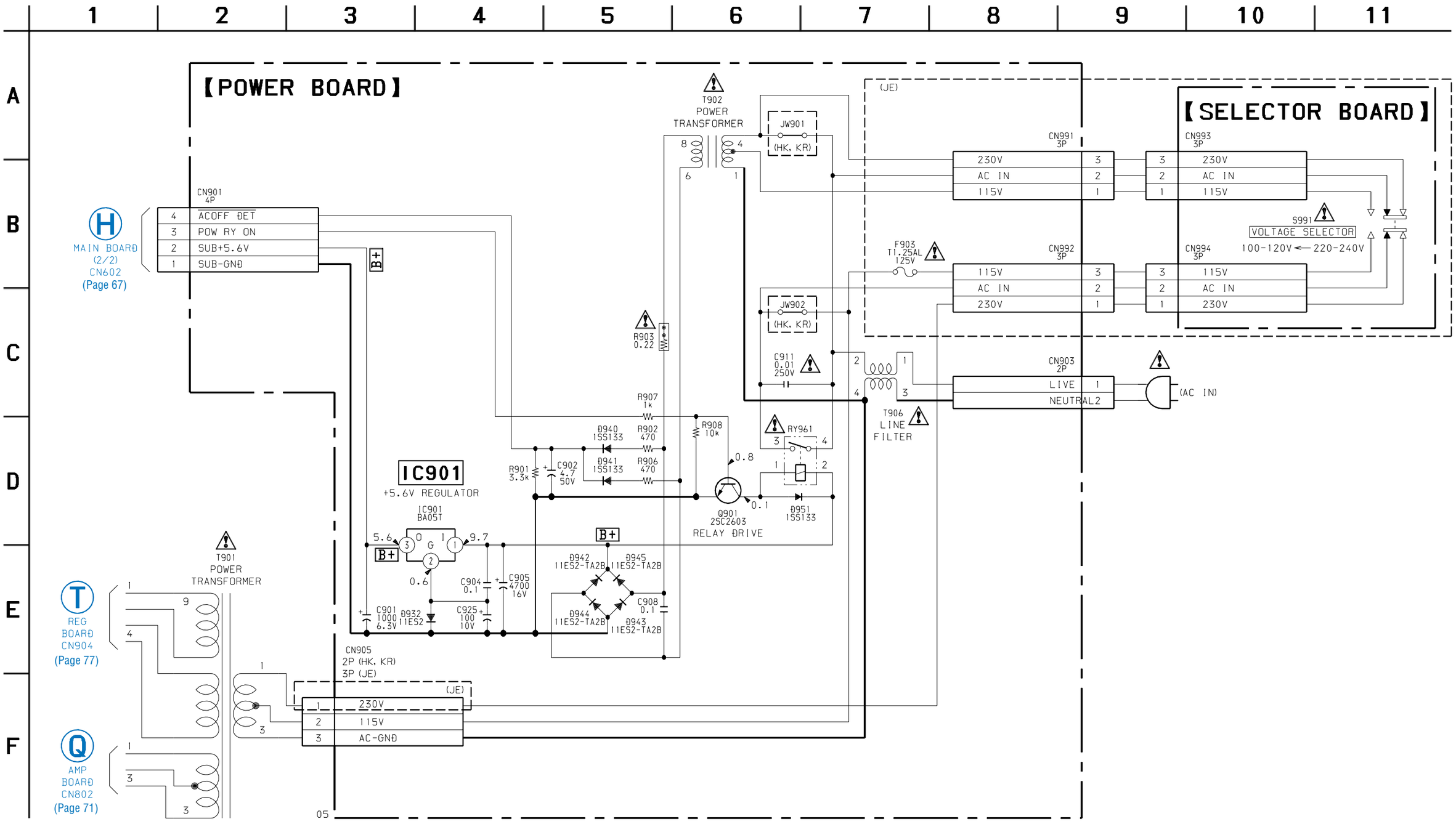


There are a few cases that the part isn't mounted in model is printed on diagrams.

- **Semiconductor Location**

Ref. No.	Location
D932	B-5
D940	C-5
D941	C-5
D942	C-5
D943	C-5
D944	C-5
D945	C-5
D951	B-4
IC901	B-5
Q901	C-5

6-30. SCHEMATIC DIAGRAM – POWER/SELECTOR Boards –



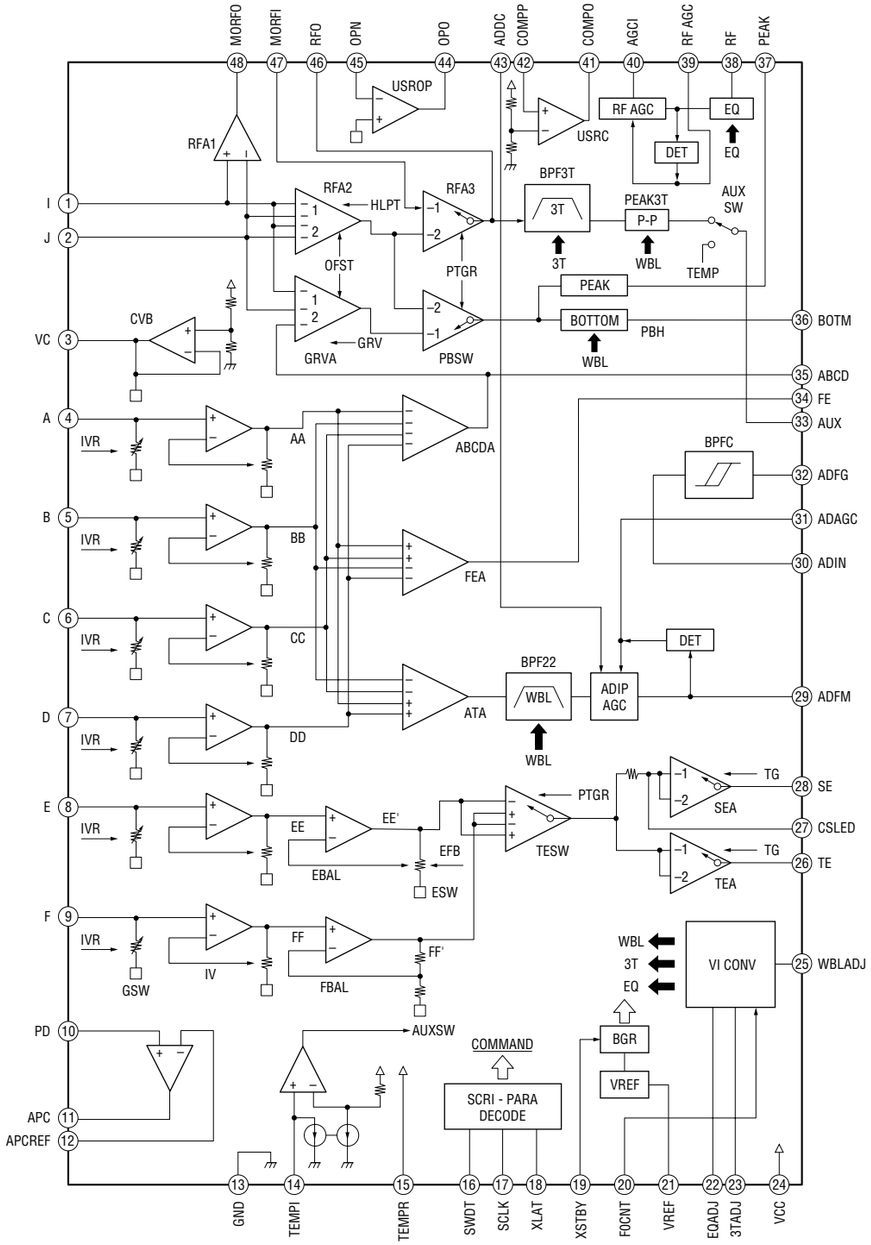
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FM

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

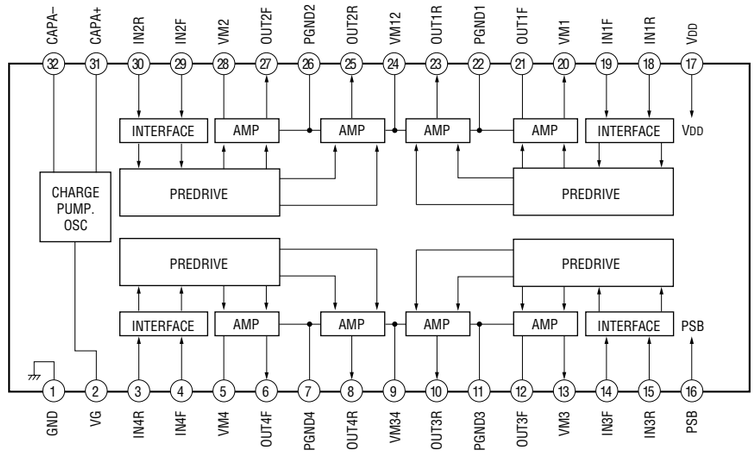
以阴影和⚠标志来识别的零部件在安全方面具有关键性。因此只能以规定号码的零部件来更换。

• **IC Block Diagrams**
– BD (MD) Board –

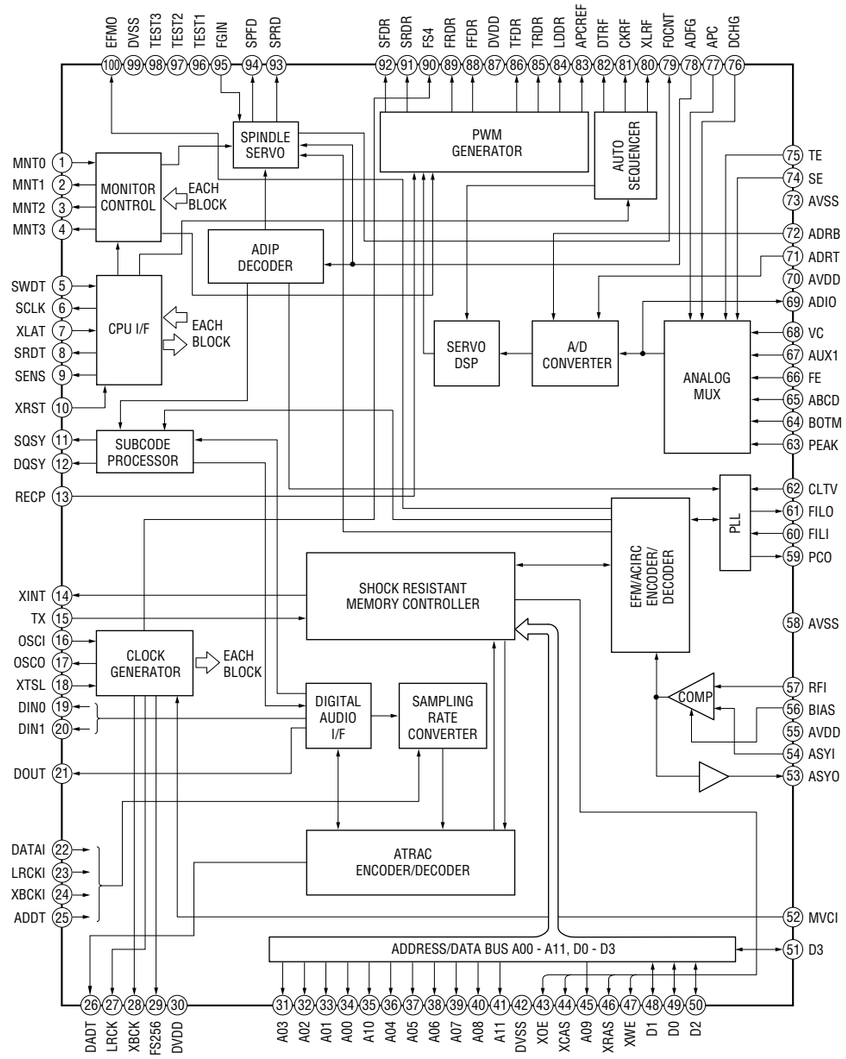
IC101 CXA2523AR



IC141 BH6511FS

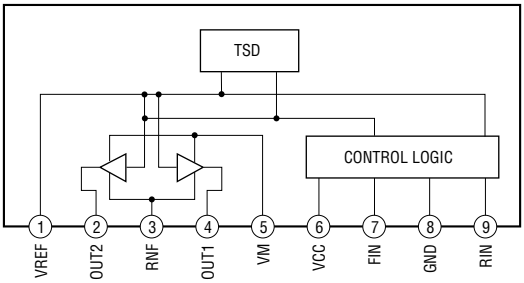


IC151 CXD2662R



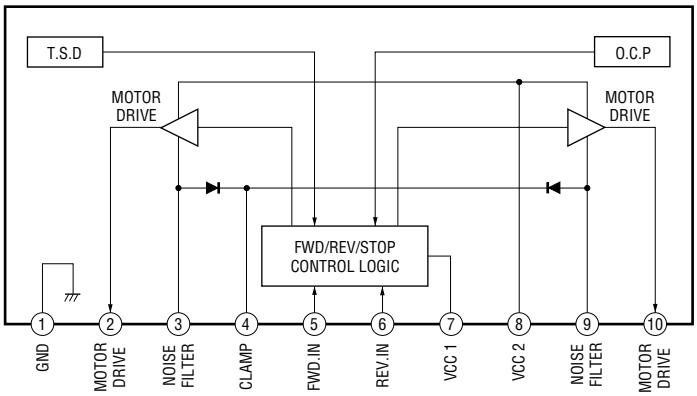
– DRIVER Board –

IC701 BA6956AN

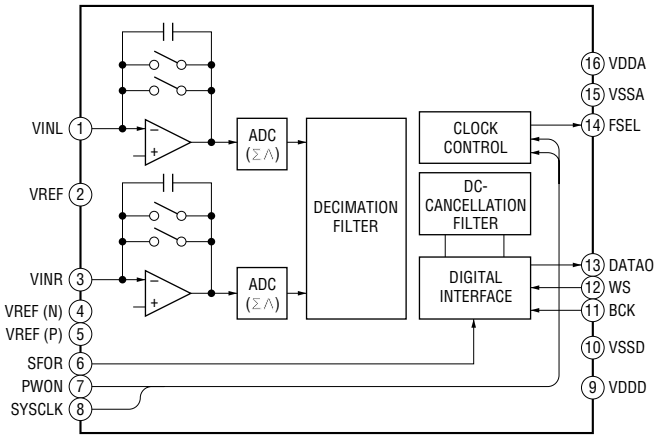


– MD DIGITAL Board –

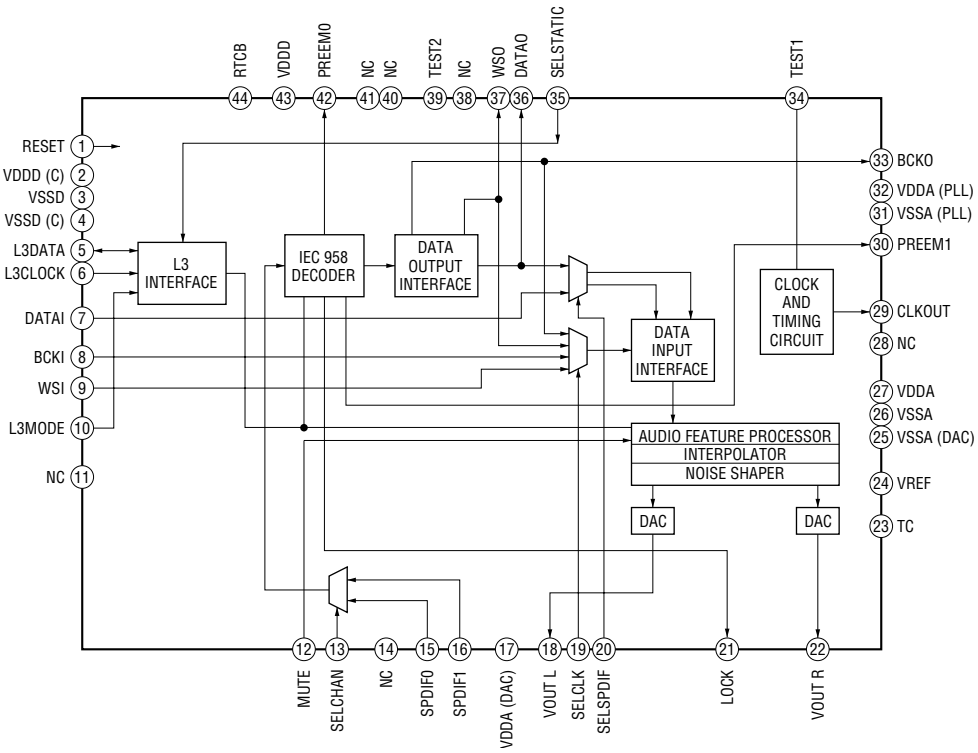
IC1004 LB1641



IC1005 UDA1360TS

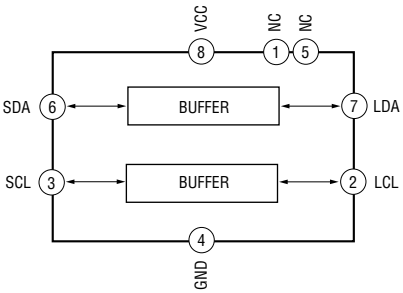


IC1006 UDA1350AH

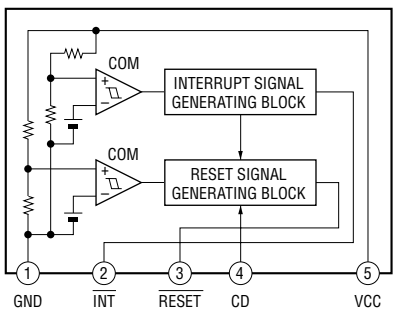


– MAIN Board –

IC502 P82B715PN

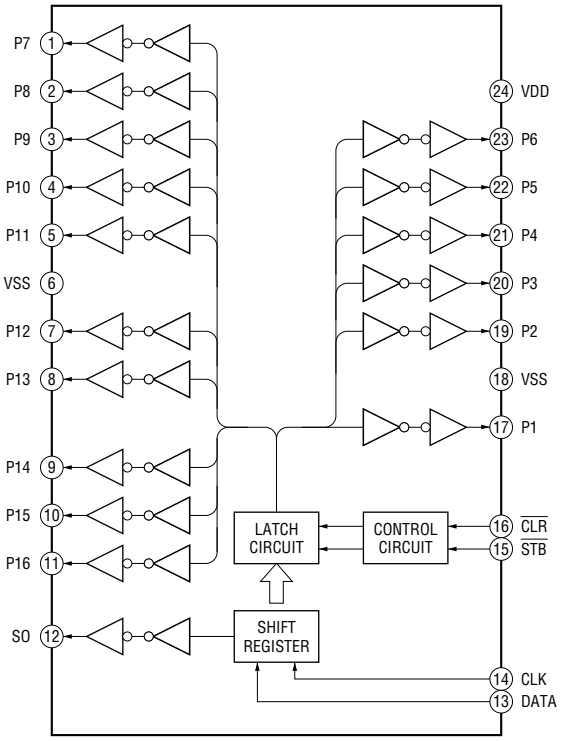


IC601 M62016L



– PANEL Board –

IC702 NJU3716M-TE2



6-31. IC PIN FUNCTION DESCRIPTION

• **BD (MD) BOARD IC101 CXA2523AR (RF AMP, FOCUS/TRACKING ERROR AMP)**

Pin No.	Pin Name	I/O	Description
1	I	I	I-V converted RF signal I input from the optical pick-up block detector
2	J	I	I-V converted RF signal J input from the optical pick-up block detector
3	VC	O	Middle point voltage (+1.65V) generation output terminal
4 to 9	A to F	I	Signal input from the optical pick-up detector
10	PD	I	Light amount monitor input from the optical pick-up block laser diode
11	APC	O	Laser amplifier output terminal to the automatic power control circuit
12	APCREF	I	Reference voltage input for setting laser power from the CXD2662R (IC151)
13	GND	—	Ground terminal
14	TEMPI	I	Connected to the temperature sensor
15	TEMPR	O	Output terminal for a temperature sensor reference voltage
16	SWDT	I	Writing serial data input from the CXD2662R (IC151)
17	SCLK	I	Serial data transfer clock signal input from the CXD2662R (IC151)
18	XLAT	I	Serial data latch pulse signal input from the CXD2662R (IC151)
19	$\overline{\text{XSTBY}}$	I	Standby signal input terminal "L": standby (fixed at "H" in this set)
20	F0CNT	I	Center frequency control voltage input terminal of internal circuit (BPF22, BPF3T, EQ) input from the CXD2662R (IC151)
21	VREF	O	Reference voltage output terminal Not used (open)
22	EQADJ	I	Center frequency setting terminal for the internal circuit (EQ)
23	3TADJ	I	Center frequency setting terminal for the internal circuit (BPF3T)
24	VCC	—	Power supply terminal (+3.3V)
25	WBLADJ	I	Center frequency setting terminal for the internal circuit (BPF22)
26	TE	O	Tracking error signal output to the CXD2662R (IC151)
27	CSLED	I	Connected to the external capacitor for low-pass filter of the sled error signal
28	SE	O	Sled error signal output to the CXD2662R (IC151)
29	ADFM	O	FM signal output of the ADIP
30	ADIN	I	Receives a ADIP FM signal in AC coupling
31	ADAGC	I	Connected to the external capacitor for ADIP AGC
32	ADFG	O	ADIP duplex signal (22.05 kHz ± 1 kHz) output to the CXD2662R (IC151)
33	AUX	O	Auxiliary signal (I_3 signal/temperature signal) output to the CXD2662R (IC151)
34	FE	O	Focus error signal output to the CXD2662R (IC151)
35	ABCD	O	Light amount signal (ABCD) output to the CXD2662R (IC151)
36	BOTM	O	Light amount signal (RF/ABCD) bottom hold output to the CXD2662R (IC151)
37	PEAK	O	Light amount signal (RF/ABCD) peak hold output to the CXD2662R (IC151)
38	RF	O	Playback EFM RF signal output to the CXD2662R (IC151)
39	RFAGC	I	Connected to the external capacitor for RF auto gain control circuit
40	AGCI	I	Receives a RF signal in AC coupling
41	COMPO	O	User comparator output terminal Not used (open)
42	COMPP	I	User comparator input terminal Not used (fixed at "L")
43	ADDC	I	Connected to the external capacitor for cutting the low band of the ADIP amplifier
44	OPO	O	User operational amplifier output terminal Not used (open)
45	OPN	I	User operational amplifier inversion input terminal Not used (fixed at "L")
46	RFO	O	RF signal output terminal
47	MORFI	I	Receives a MO RF signal in AC coupling
48	MORFO	O	MO RF signal output terminal

- **BD (MD) BOARD IC151 CXD2662R**
  (DIGITAL SIGNAL PROCESSOR, DIGITAL SERVO PROCESSOR, EFM/ACIRC ENCODER/DECODER, SHOCK PROOF MEMORY CONTROLLER, ATRAC ENCODER/DECODER)

Pin No.	Pin Name	I/O	Description
1	MNT0 (FOK)	O	Focus OK signal output terminal "H" is output when focus is on ("L": NG) Not used (open)
2	MNT1 (SHOCK)	O	Track jump detection signal output to the MD mechanism controller (IC1001)
3	MNT2 (XBUSY)	O	Busy monitor signal output to the MD mechanism controller (IC1001)
4	MNT3 (SLOCK)	O	Spindle servo lock status monitor signal output to the MD mechanism controller (IC1001)
5	SWDT	I	Writing serial data signal input from the MD mechanism controller (IC1001)
6	SCLK	I (S)	Serial data transfer clock signal input from the MD mechanism controller (IC1001)
7	XLAT	I (S)	Serial data latch pulse signal input from the MD mechanism controller (IC1001)
8	SRDT	O (3)	Reading serial data signal output to the MD mechanism controller (IC1001)
9	SENS	O (3)	Internal status (SENSE) output to the MD mechanism controller (IC1001)
10	$\overline{\text{XRST}}$	I (S)	Reset signal input from the MD mechanism controller (IC1001) "L": reset
11	SQSY	O	Subcode Q sync (SCOR) output to the MD mechanism controller (IC1001) "L" is output every 13.3 msec Almost all, "H" is output
12	DQSY	O	Digital In U-bit CD format subcode Q sync (SCOR) output to the MD mechanism controller (IC1001) "L" is output every 13.3 msec Almost all, "H" is output
13	RECP	I	Laser power selection signal input from the MD mechanism controller (IC1001) "L": playback mode, "H": recording mode
14	XINT	O	Interrupt status output to the MD mechanism controller (IC1001)
15	TX	O	Magnetic head on/off signal output to the over write head drive (IC181)
16	OSCI	I	System clock signal (90.3168 MHz) input terminal
17	OSCO	O	System clock signal (512Fs=90.3168 MHz) output terminal Not used (open)
18	XTSL	I	Input terminal for the system clock frequency setting "L": 45.1584 MHz, "H": 90.3168 MHz (fixed at "H" in this set)
19	DIN0	I	Digital audio signal input terminal when recording mode Not used
20	DIN1	I	Digital audio signal input terminal when recording mode
21	DOUT	O	Digital audio signal output terminal when playback mode
22	DADTAI	I	Recording data input from the A/D converter (IC1005)
23	LRCKI	I	L/R sampling clock signal (44.1 kHz) input from the D/A converter (IC1006), A/D converter (IC1005)
24	XBCKI	I	Bit clock signal (2.8224 MHz) input from the D/A converter (IC1006), A/D converter (IC1005)
25	ADDT	I	Recording data input terminal Not used (fixed at "L")
26	DADT	O	Playback data output terminal Not used (open)
27	LRCK	O	L/R sampling clock signal (44.1 kHz) output terminal Not used (open)
28	XBCK	O	Bit clock signal (2.8224 MHz) output terminal Not used (open)
29	FS256	O	Clock signal (11.2896 MHz) output terminal Not used (open)
30	DVDD	—	Power supply terminal (+3.3V) (digital system)
31 to 34	A03 to A00	O	Address signal output to the D-RAM (IC152)
35	A10	O	Address signal output to the D-RAM (IC152)
36 to 40	A04 to A08	O	Address signal output to the D-RAM (IC152)
41	A11	O	Address signal output to the external D-RAM Not used (open)
42	DVSS	—	Ground terminal (digital system)
43	$\overline{\text{XOE}}$	O	Output enable signal output to the D-RAM (IC152) "L" active

* I (S) stands for schmitt input, I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O.

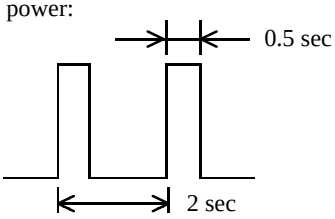
Pin No.	Pin Name	I/O	Description
44	$\overline{\text{XCAS}}$	O	Column address strobe signal output to the D-RAM (IC152) "L" active
45	A09	O	Address signal output to the D-RAM (IC152)
46	$\overline{\text{XRAS}}$	O	Row address strobe signal output to the D-RAM (IC152) "L" active
47	$\overline{\text{XWE}}$	O	Write enable signal output to the D-RAM (IC152) "L" active
48	D1	I/O	Two-way data bus with the D-RAM (IC152)
49	D0	I/O	
50	D2	I/O	
51	D3	I/O	
52	MVCI	I (S)	Digital in PLL oscillation input from the external VCO Not used (fixed at "L")
53	ASYO	O	Playback EFM full-swing output terminal
54	ASYI	I (A)	Playback EFM asymmetry comparator voltage input terminal
55	AVDD	—	Power supply terminal (+3.3V) (analog system)
56	BIAS	I (A)	Playback EFM asymmetry circuit constant current input terminal
57	RFI	I (A)	Playback EFM RF signal input from the CXA2523AR (IC101)
58	AVSS	—	Ground terminal (analog system)
59	PCO	O (3)	Phase comparison output for master clock of the recording/playback EFM master PLL
60	FILI	I (A)	Filter input for master clock of the recording/playback master PLL
61	FILO	O (A)	Filter output for master clock of the recording/playback master PLL
62	CLTV	I (A)	Internal VCO control voltage input of the recording/playback master PLL
63	PEAK	I (A)	Light amount signal (RF/ABCD) peak hold input from the CXA2523AR (IC101)
64	BOTM	I (A)	Light amount signal (RF/ABCD) bottom hold input from the CXA2523AR (IC101)
65	ABCD	I (A)	Light amount signal (ABCD) input from the CXA2523AR (IC101)
66	FE	I (A)	Focus error signal input from the CXA2523AR (IC101)
67	AUX1	I (A)	Auxiliary signal (I_3 signal/temperature signal) input from the CXA2523AR (IC101)
68	VC	I (A)	Middle point voltage (+1.65V) input from the CXA2523AR (IC101)
69	ADIO	O (A)	Monitor output of the A/D converter input signal Not used (open)
70	AVDD	—	Power supply terminal (+3.3V) (analog system)
71	ADRT	I (A)	A/D converter operational range upper limit voltage input terminal (fixed at "H" in this set)
72	ADRB	I (A)	A/D converter operational range lower limit voltage input terminal (fixed at "L" in this set)
73	AVSS	—	Ground terminal (analog system)
74	SE	I (A)	Sled error signal input from the CXA2523AR (IC101)
75	TE	I (A)	Tracking error signal input from the CXA2523AR (IC101)
76	DCHG	I (A)	Connected to the +3.3V power supply
77	TEST4	I	Input terminal for the test Not used (fixed at "H")
78	ADFG	I (S)	ADIP duplex FM signal (22.05 kHz ± 1 kHz) input from the CXA2523AR (IC101)
79	F0CNT	O	Filter f0 control signal output to the CXA2523AR (IC101)
80	XLRF	O	Serial data latch pulse signal output to the CXA2523AR (IC101)
81	CKRF	O	Serial data transfer clock signal output to the CXA2523AR (IC101)
82	DTRF	O	Writing serial data output to the CXA2523AR (IC101)
83	APCREF	O	Control signal output to the reference voltage generator circuit for the laser automatic power control
84	TEST0	O	Input terminal for the test Not used (open)
85	TRDR	O	Tracking servo drive PWM signal (–) output to the BH6511FS (IC141)
86	TFDR	O	Tracking servo drive PWM signal (+) output to the BH6511FS (IC141)
87	DVDD	—	Power supply terminal (+3.3V) (digital system)
88	FFDR	O	Focus servo drive PWM signal (+) output to the BH6511FS (IC141)

* I (S) stands for schmitt input, I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O.

Pin No.	Pin Name	I/O	Description
89	FRDR	O	Focus servo drive PWM signal (–) output to the BH6511FS (IC141)
90	FS4	O	Clock signal (176.4 kHz) output terminal (X'tal system) Not used (open)
91	SRDR	O	Sled servo drive PWM signal (–) output to the BH6511FS (IC141)
92	SFDR	O	Sled servo drive PWM signal (+) output to the BH6511FS (IC141)
93	SPRD	O	Spindle servo drive PWM signal (–) output to the BH6511FS (IC141)
94	SPFD	O	Spindle servo drive PWM signal (+) output to the BH6511FS (IC141)
95	FGIN	I (S)	Input terminal for the test (fixed at "L")
96	TEST1	I	
97	TEST2	I	
98	TEST3	I	
99	DVSS	—	Ground terminal (digital system)
100	EFMO	O	EFM signal output terminal when recording mode

* I (S) stands for schmitt input, I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O.

• MD DIGITAL BOARD IC1001 M30805MG-205GP (MD MECHANISM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1, 2	—	O	Not used (open)
3	LVL1	O	L-ch level output terminal Not used (open)
4	LVL0	O	R-ch level output terminal Not used (open)
5 to 7	—	O	Not used (open)
8	$\overline{\text{MUTE}}$	O	Muting control signal output to the D/A converter (IC1006) "L": muting
9	DARST	O	Reset signal output to the D/A converter (IC1006) "H": reset
10	SLICERSEL	O	IEC958 input selection signal output to the D/A converter (IC1006) "L": MD, "H": CD
11	LD-LOW	O	Loading motor drive voltage control signal output for the loading motor driver (IC1004) "H" active
12	LDIN	O	Motor control signal output to the loading motor driver (IC1004) "L" active *1
13	LDOUT	O	Motor control signal output to the loading motor driver (IC1004) "L" active *1
14	MOD	O	Laser modulation select signal output to the HF module switch circuit Stop: "L", Playback power: "H", Recording power: 
15	BYTE	I	External data bus line byte selection signal input "L": 16 bit, "H": 8 bit (fixed at "L")
16	CNVSS	I	Mode setting terminal "H": processor mode (fixed at "H")
17	X-CIN	I	Sub system clock input terminal Not used (open)
18	X-COUT	O	Sub system clock output terminal Not used (open)
19	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC931) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
20	XOUT	O	Main system clock output terminal (10 MHz)
21	VSS0	—	Ground terminal
22	XIN	I	Main system clock input terminal (10 MHz)
23	VCC0	—	Power supply terminal (+3.3V)
24	$\overline{\text{NMI}}$	I	Non-maskable interrupt input terminal "L" active (fixed at "H" in this set)
25	DQSY	I	Digital In U-bit CD format subcode Q sync (SCOR) input from the CXD2662R (IC151) "L" is input every 13.3 msec Almost all, "H" is input
26	P.DOWN	I	Power down detection signal input from the system controller (IC501) "L": power down, normally: "H"
27	SQSY	I	Subcode Q sync (SCOR) input from the CXD2662R (IC151) "L" is input every 13.3 msec Almost all, "H" is input
28	NC	O	Not used (open)
29	LDON	O	Laser diode on/off control signal output to the automatic power control circuit "H": laser on
30	LIMIT-IN	I	Detection input from the sled limit-in detect switch (S101) The optical pick-up is inner position when "L"

*1 Loading motor (M103) control

Mode / Terminal	LOADING	EJECT	BRAKE	RUN IDLE
LDIN (pin ⑫)	"L"	"H"	"L"	"H"
LDOUT (pin ⑬)	"H"	"L"	"L"	"H"

Pin No.	Pin Name	I/O	Description
31	C2-PWM-B	O	Not used (open)
32	XINT	I	Interrupt status input from the CXD2662R (IC151)
33	—	O	Not used (open)
34	XELT	I	Not used (open)
35	WR-PWR	O	Laser power select signal output to the CXD2662R (IC151) and HF module switch circuit “L”: playback mode, “H”: recording mode
36	I2CCLK	I/O	Shift clock signal input/output terminal for the IIC bus
37	I2CDAT	I/O	Data input/output terminal for the IIC bus
38	SWDT	O	Writing data output to the CXD2662R (IC151)
39	VCC1	—	Power supply terminal (+3.3V)
40	SRDT	I	Reading data input from the CXD2662R (IC151)
41	VSS1	—	Ground terminal
42	SCLK	O	Serial clock signal output to the CXD2662R (IC151)
43	REC-SW	I	Detection input from the recording position of over write head (HR901) detect switch (S105) “L” recording mode
44	CLIPDTO	O	Serial data output terminal
45	CLIPDTI	I	Serial data input terminal
46	CLIPCK	O	Serial clock signal output terminal Not used (open)
47	$\overline{\text{DIG-RST}}$	O	Reset signal output to the CXD2662R (IC151) and BH6511FS (IC152) “L”: reset
48	SENS	I	Internal status (SENSE) input from the CXD2662R (IC151)
49	PLAY-SW	I	Detection input from the playback position of over write head (HR901) detect switch (S104) “L” playback mode
50	XLAT	O	Serial data latch pulse signal output to the CXD2662R (IC151)
51	OUT-SW	I	Detection input from the loading-out detect switch (S103) “L” at a load-out position, others: “H”
52	—	I	Not used (open)
53	—	O	Not used (open)
54	—	I	Not used (open)
55	—	O	Not used (open)
56	MNT2 (XBUSY)	I	Busy signal input from the CXD2662R (IC151)
57	VSS2	—	Ground terminal
58	MNT1 (SHOCK)	I	Track jump detection signal input from the CXD2662R (IC151)
59	VCC2	—	Power supply terminal (+3.3V)
60	EEP-WP	O	Writing protect signal output to the EEPROM (IC195)
61	SDA	I/O	Two-way data bus with the EEPROM (IC195)
62	BCLK/ALE/CLKO	O	Not used (open)
63	$\overline{\text{RD/DW}}$	O	Data reading strobe signal output to the flash memory Not used (open)
64	$\overline{\text{BHE/CASH}}$	O	Not used (open)
65	$\overline{\text{WR/CASH}}$	O	Writing enable signal output to the flash memory “L” active Not used (fixed at “H”)
66	SCL	O	Clock signal output to the EEPROM (IC195)
67	REFLECT	I	Detection input from the disc reflection rate detect switch (S102-1) “L”: high reflection rate disc, “H”: low reflection rate disc
68	PROTECT	I	REC-proof claw detect input from the protect detect switch (S102-2) “H”: write protect
69	$\overline{\text{CS0}}$	O	Chip select signal output to the flash memory Not used (open)
70	$\overline{\text{CS1}}$	O	Chip select signal output terminal Not used (open)
71, 72	—	—	Not used (open)
73	A19	O	Address signal output to the flash memory Not used (open)

Pin No.	Pin Name	I/O	Description
74	VCC3	—	Power supply terminal (+3.3V)
75	A18	O	Address signal output to the flash memory Not used (open)
76	VSS3	—	Ground terminal
77 to 85	A17 to A9	O	Address signal output to the flash memory Not used (open)
86 to 89	SEL3 to SEL0	I	Model destination setting input terminal
90	WP	O	Writing protect signal output to the flash memory Not used (fixed at “L”)
91	VCC4	—	Power supply terminal (+3.3V)
92	A8	O	Address signal output to the flash memory Not used (open)
93	VSS4	—	Ground terminal
94 to 101	A7 to A0	O	Address signal output to the flash memory Not used (open)
102 to 113	D15 to D4	I/O	Two-way data bus with the flash memory Not used (open)
114	CLIP SEL	O	Not used (open)
115	I2CBUSY	I/O	Busy signal input/output for the IIC bus
116	DALOCK	I	Lock signal input from the D/A converter (IC1006)
117	LINE-MUTE	O	Audio line muting on/off control signal output
118	ADPDWN	O	Power down detection signal output to the A/D converter (IC1005)
119 to 122	D3 to D0	I/O	Two-way data bus with the flash memory Not used (open)
123	SPDIF-CUT	O	MD/CD digital input selection signal output terminal Not used (open)
124	OPTSEL	O	CD/optical digital input selection signal output to the digital signal selector (IC1008)
125 to 129	—	O	Not used (open)
130	VSS5	—	Ground terminal
131	—	O	Not used (open)
132	VCC5	—	Power supply terminal (+3.3V)
133	OP-LEVEL	I	Optical pick-up voltage input from the automatic power control circuit
134 to 139	—	O	Not used (open)
140	AVSS	—	Ground terminal (for analog system)
141	—	O	Not used (open)
142	VREF	I	Reference voltage (+3.3V) input terminal
143	AVCC	—	Power supply terminal (+3.3V) (for analog system)
144	—	O	Not used (open)

- **MD DIGITAL BOARD IC1101 µPDSS3033AYGF-M10-3BA (CD MECHANISM CONTROLLER)**

Pin No.	Pin Name	I/O	Description
1	DRVDAT	O	Serial data output to a FL driver Not used (open)
2	DRVCLK	O	Serial data transfer clock signal output to a FL driver Not used (open)
3	I2CDAT	I/O	Data input/output terminal for the IIC bus
4	NC	O	Not used (open)
5	I2CCLK	I/O	Shift clock signal input/output terminal for the IIC bus
6	GND	—	Ground terminal
7	DATA	O	Serial data output to the CD block
8	CLK	O	Serial data transfer clock signal output to the CD block
9	EVDD	—	Power supply terminal (+5V)
10	EVSS	—	Ground terminal
11	XLT	O	Serial data latch pulse output to the CD block
12	SENSE	I	Internal status detection monitor input from the CD block
13	LDON	O	Laser diode on/off control signal output to the CD block "H": laser on
14	LPH	O	Laser power control signal output terminal Not used (open)
15	SUBQ	I	Subcode Q data input from the CD block
16	NC	O	Not used (open)
17	SQCLK	O	Subcode Q data reading clock signal output to the CD block
18	CTRL1	O	Disc speed selection (normal/double speed) signal output to the CD block
19	X4	O	Disc speed selection (normal/quadruple speed) signal output to the CD block
20	8CM	O	CD disc size select (8cm/12cm) signal output terminal Not used (open)
21	GND/VPP	—	Ground terminal
22	SPINDLEMUTE	O	Spindle motor muting control signal output to the CD block "H": muting on
23 to 28	NC	O	Not used (open)
29	$\overline{\text{AMUTE}}$	O	Audio muting on/off control signal output terminal "L": muting on Not used (open)
30	$\overline{\text{DACMUTE}}$	O	Muting on/off control signal output to the D/A converter (IC1006) "L": muting on
31	BDPWR	O	Power supply for the CD block on/off control signal output "H": power on
32	$\overline{\text{BDRST}}$	O	Reset signal output to the CD block
33	$\overline{\text{FUNC ST}}$	O	Function select signal output terminal Not used (open)
34	$\overline{\text{RESET}}$	I	Reset signal input from the system controller (IC501)
35	XT1	I	Sub system clock input terminal Not used (fixed at "L")
36	XT2	O	Sub system clock output terminal Not used (open)
37	CHEMICON	I	Connected to the external capacitor
38	X2	O	Main system clock output terminal (16MHz)
39	X1	I	Main system clock input terminal (16MHz)
40	VSS	—	Ground terminal
41	VDD	—	Power supply terminal (+5V)
42	NC	—	Not used (open)
43 to 45	ENCODE0 to ENCODE2	I	Jog dial pulse input terminal Not used (fixed at "H")
46	NC	O	Not used (open)
47	TRAYSENCE3	I	Detection input from the disc tray 3 height sensor (IC733) "H": disc tray 3 position is chucking position
48	$\overline{\text{CNT-SW}}$	I	Detection input from the count detect switch Not used (fixed at "H")
49	$\overline{\text{PRTC-SW}}$	I	Detection input from the protect switch Not used (fixed at "H")
50	TRAYSENS1	I	Detection input from the disc tray 1 height sensor (IC731) "H": disc tray 1 position is chucking position

Pin No.	Pin Name	I/O	Description
51	TRAYSENS2	I	Detection input from the disc tray 2 height sensor (IC732) “H”: disc tray 2 position is chucking position
52	$\overline{\text{OUT-SW}}$	I	Detection input from the OUT switch (S742) “L”: when sub tray is chucking position
53	$\overline{\text{IN-SW}}$	I	Detection input from the IN switch (S741) “L”: when sub tray slides out of the chucking position
54	$\overline{\text{LOD-POS}}$	O	CD loading motor (M721) control signal output to the motor driver IC (IC701) “L” active *1
55	$\overline{\text{LOD-NEG}}$	O	CD loading motor (M721) control signal output to the motor driver IC (IC701) “L” active *1
56	$\overline{\text{CLP POS}}$	O	Motor control signal output to the motor driver IC “L” active Not used (open)
57	$\overline{\text{CLP NEG}}$	O	Motor control signal output to the motor driver IC “L” active Not used (open)
58	BVDD	—	Power supply terminal (+5V) (for digital system)
59	BVSS	—	Ground terminal (for digital system)
60 to 72	NC	O	Not used (open)
73	FUN	O	Fun motor on/off control signal output terminal “H”: fun motor on Not used (open)
74	AVDD	—	Power supply terminal (+5V)
75	AVSS	—	Ground terminal
76	AVREF	I	Reference voltage (+5V) input terminal
77 to 80	KEY0 to KEY3	I	Key input terminal (A/D input) Not used (fixed at “H”)
81 to 83	SEL0 to SEL2	I	Model destination setting terminal (A/D input)
84	TEL	I	Tracking error level detection input terminal Not used (open)
85	SEL3	I	Model (CD mechanism deck) destination setting terminal (A/D input)
86	DISC-SENS	I	Detection input from the disc in detect sensor (IC751) (A/D input) “H”: disc in
87	MECHA-JIGU	I	Not used (open)
88	$\overline{\text{ADJ}}$	I	Setting terminal for the CD test mode “L”: CD test mode Normally: fixed at “H”
89	$\overline{\text{I2CHELP}}$	I	Busy signal input for the IIC bus
90	$\overline{\text{I2CHELP}}$	I	Busy signal input for the IIC bus
91	SCOR	I	Subcode sync (S0+S1) detection signal input from the CD block
92	NC	O	Not used (open)
93	$\overline{\text{AC-CUT}}$	I	Power down detection signal input from the system controller (IC501)
94, 95	JOG0, JOG1	I	Rotary encoder jog dial pulse input terminal Not used (fixed at “L”)
96	NC	O	Not used (open)
97	$\overline{\text{LEDLAT}}$	O	Serial data latch pulse output to a FL driver Not used (open)
98	$\overline{\text{DRVCS}}$	I	Chip select signal output to a FL driver Not used (open)
99	$\overline{\text{DRVRST}}$	I	Reset signal output to a FL driver “L”: reset Not used (open)
100	GND	—	Ground terminal

*1 Loading motor (M721) control

Terminal \ Mode	LOADING	EJECT	BRAKE	RUN IDLE
$\overline{\text{LOD NEG}}$ (pin ⑤⑤)	“L”	“H”	“L”	“H”
$\overline{\text{LOD POS}}$ (pin ⑤④)	“H”	“L”	“L”	“H”

- **MAIN BOARD IC506 µPDSS3033AYGF-M11-3BA (SYSTEM CONTROLLER)**

Pin No.	Pin Name	I/O	Description
1	GEQ DATA	O	Serial data output to the M62428AFP (IC505)
2	GEQ CLK	O	Serial data transfer clock signal output to the M62428AFP (IC505)
3	IIC DAT	I/O	Data input/output terminal for the IIC bus
4	CANT USE	O	Not used (fixed at "L")
5	IIC CLK	I/O	Shift clock signal input/output terminal for the IIC bus
6	CANT USE	I	Not used (fixed at "L")
7	LCD DATA	O	Display serial data output to the liquid crystal display (LCD600)
8	LCD CLK	O	Display serial data transfer clock signal output to the liquid crystal display (LCD600)
9	EVDD	—	Power supply terminal (+5V)
10	EVSS	—	Ground terminal
11, 12	MOTOR1, MOTOR2	O	Motor drive signal output terminal Not used (open)
13	LCD RS	O	Reset signal output to the liquid crystal display "L": reset Not used (open)
14	LCD CE	O	Serial data latch pulse signal output to the liquid crystal display "L": data output Not used (open)
15	KB DATA	I	Key board data input terminal Not used (fixed at "L")
16	KB CLK OUT	O	Key board data transfer clock signal output terminal Not used (open)
17	KB CLK	I	Key board data reading clock signal input terminal Not used (fixed at "L")
18	IIC HELP	I/O	Busy signal input/output for the IIC bus
19, 20	MODEL2, MODEL1	I	Model Destination setting terminal
21	VPP	O	Not used
22	ST MUTE	O	Tuner muting on/off control signal output to the FM/AM tuner unit
23	ST STEREO	I	FM stereo detection signal input from the FM/AM tuner unit "L": FM stereo
24	ST TUNED	I	Tuning detection signal input from the FM/AM tuner unit "L": tuned, "H": detuned
25	ST CE	O	PLL serial chip enable signal output to the FM/AM tuner unit
26	TA->ST DATA	O	PLL serial data output to the FM/AM tuner unit
27	ST->TA DATA	I	PLL serial data input from the FM/AM tuner unit
28	ST CLK	O	PLL serial data transfer clock signal output to the FM/AM tuner unit
29	HP MUTE	O	Headphone muting control signal output terminal "H": detuned
30	SOFT CHK	O	For soft check terminal Normally open
31	LCD ON/OFF	O	Power supply for liquid crystal display (LCD600) on/off control terminal
32	PROTECT	O	Speaker output over load detection signal input "L": over load
33	DEVICE1	I	Not used (fixed at "L")
34	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC508) "L": reset For several hundreds msec. after the power supply rises, "L" is input, then it changes to "H"
35	XTIN	I	Sub system clock input terminal (32.768 kHz)
36	XTOUT	O	Sub system clock output terminal (32.768 kHz)
37	REGC	I	Connected to the external capacitor
38	XOUT	O	Main system clock output terminal (16 MHz)
39	XIN	I	Main system clock input terminal (16 MHz)
40	VSS	—	Ground terminal
41	VDD	—	Power supply terminal (+5V)
42	CLK OUT	O	Not used (open)
43	$\overline{\text{LINE MUTE}}$	O	Line muting on/off control signal output terminal "L": muting on
44	$\overline{\text{STK MUTE}}$	O	Audio muting on/off control signal output to the power amplifier (IC801) "L": muting on

Pin No.	Pin Name	I/O	Description
45	SPK RELAY	O	Speaker on/off relay (RY801) control signal output "L": speaker off
46	MD/CD POWER	O	Power down detection signal output to the MD mechanism controller (IC1001) and CD mechanism controller (IC1101) "L": power down
47	TR RELAY	O	Standby relay (RY961) control signal output "L": speaker off
48	$\overline{\text{RECMUTE}}$	O	Muting on/off control signal output of tape output signal "L": muting on
49	$\overline{\text{DIMMER}}$	O	LCD back light on/off control signal output "H": LED on
50	NC	O	Not used (open)
51	KBD CHK	I	Key board check signal input terminal Not used (fixed at "L")
52 to 56	NC	O	Not used (open)
57	STBY LED	O	LED drive signal output of the I/⏻ indicator (D601) "H": LED on
58	BVDD	—	Power supply terminal (+5V)
59	BVSS	—	Ground terminal
60	LED DATA	O	Serial data output to the LED driver (IC702)
61	LED CLK	O	Serial data transfer clock signal output to the LED driver (IC702)
62	LED CE	O	Chip select signal output to the LED driver (IC702)
63	FAN	O	Fan motor (M801) drive signal output
64	$\overline{\text{LED CLEAR}}$	O	Reset signal output to the LED driver (IC702)
65	FUNC2	O	Function selection signal output terminal Not used (open)
66	NC	O	Not used (open)
67	HEADPHONE IN	I	Headphone in detection signal input "H": headphone in
68	ENC VOL A	I	Jog dial pulse input from the rotary encoder (S701 VOLUME) A phase input
69	ENC VOL B	I	Jog dial pulse input from the rotary encoder (S701 VOLUME) B phase input
70	ENC JOG A	I	Jog dial pulse input from the rotary encoder (S726 ENTER/YES PUSH) A phase input
71	ENC JOG B	I	Jog dial pulse input from the rotary encoder (S726 ENTER/YES PUSH) B phase input
72	DEVICE3	—	Not used (fixed at "L")
73	DEVICE2	—	Not used (fixed at "H")
74	AVDD	—	Power supply terminal (+5V)
75	AVSS	—	Ground terminal
76	AVREF	I	Reference voltage (+5V) input terminal
77, 78	NC	O	Not used (open)
79 to 82	DIST 1 to DIST 4	I	Model destination setting terminal
83	LEVEL-L	I	L-ch level input terminal
84	LEVEL-R	I	R-ch level input terminal
85	KEY1	I	Key input terminal (A/D input) S703, S705, S707, S723 to S726(CD ► II, MD ► II, TUNER/BAND, MENU/NO, CLEAR, CURSOR ◄◄ ▬▬ ►►, ENTER/YES PUSH, keys input)
86	KEY2	I	Key input terminal (A/D input) S704, S706, S708, S710, S712 to S722 (FUNCTION, MD ⏏, PLAY MODE, SYNC MODE, CD SYNC HIGH SPEED, CD SYNC NORM SPEED, REC/REC IT, REC MODE, REPEAT STEREO/MONO, ⏏ (CD3), CD3, ⏏ (CD2), CD2, ⏏ (CD1), CD1, keys input)
87	KEY3	I	Key input terminal (A/D input) S702, S709 (I/⏻, ■ keys input)
88	KEY4	I	Key input terminal (A/D input) Not used (fixed at "H")
89	NMI	I	Non-maskable interrupt input terminal Fixed at "L" in this set
90	INTP0	I	Key board data reading clock signal input terminal Not used (fixed at "H")
91	INTP1	I	Not used (fixed at "H")
92	PC POWER	I	Power on request signal input from the PC LINK jack (J503)
93	SIRCS	I	Remote control signal input from the remote control receiver (IC701)

Pin No.	Pin Name	I/O	Description
94	AC CUT IN	I	AC power off detection signal input from the reset signal generator (IC508) Not used (open)
95	RDS DATA	I	RDS serial data input from the RDS decoder Not used (open)
96	RDS CLK	I	RDS serial data transfer clock signal input from the RDS decoder Not used (open)
97	SELF WRITE IN	I	Not used
98	OUT	O	Not used
99	CLK	I	Not used
100	GEQ CE	O	Serial data latch pulse signal output to the M62428AFP (IC505)

SECTION 7
EXPLODED VIEWS

NOTE:

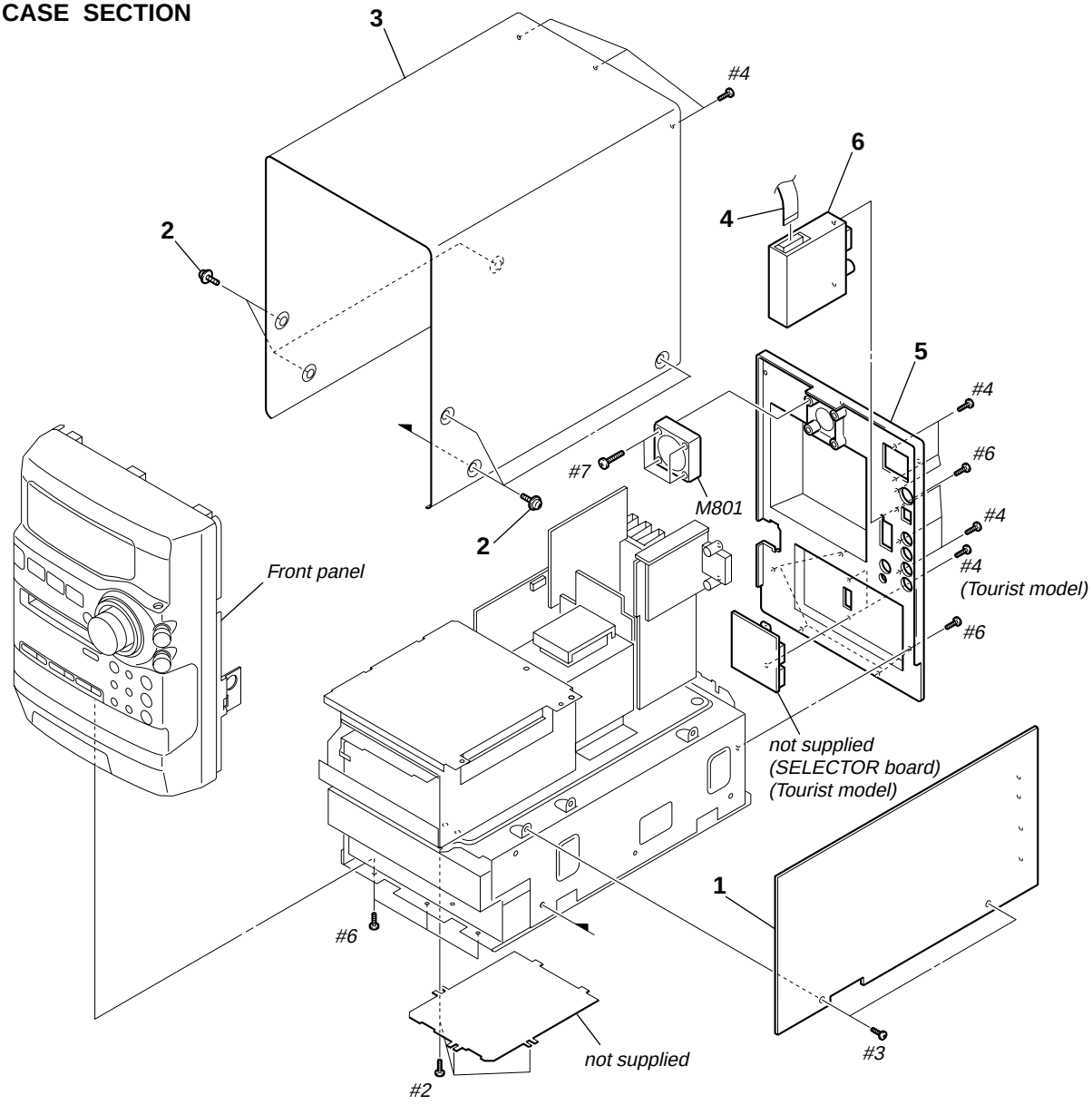
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example:
  KNOB, BALANCE (WHITE) . . . (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Abbreviation
  HK : Hong Kong model
  JE : Tourist model
  KR : Korean model

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

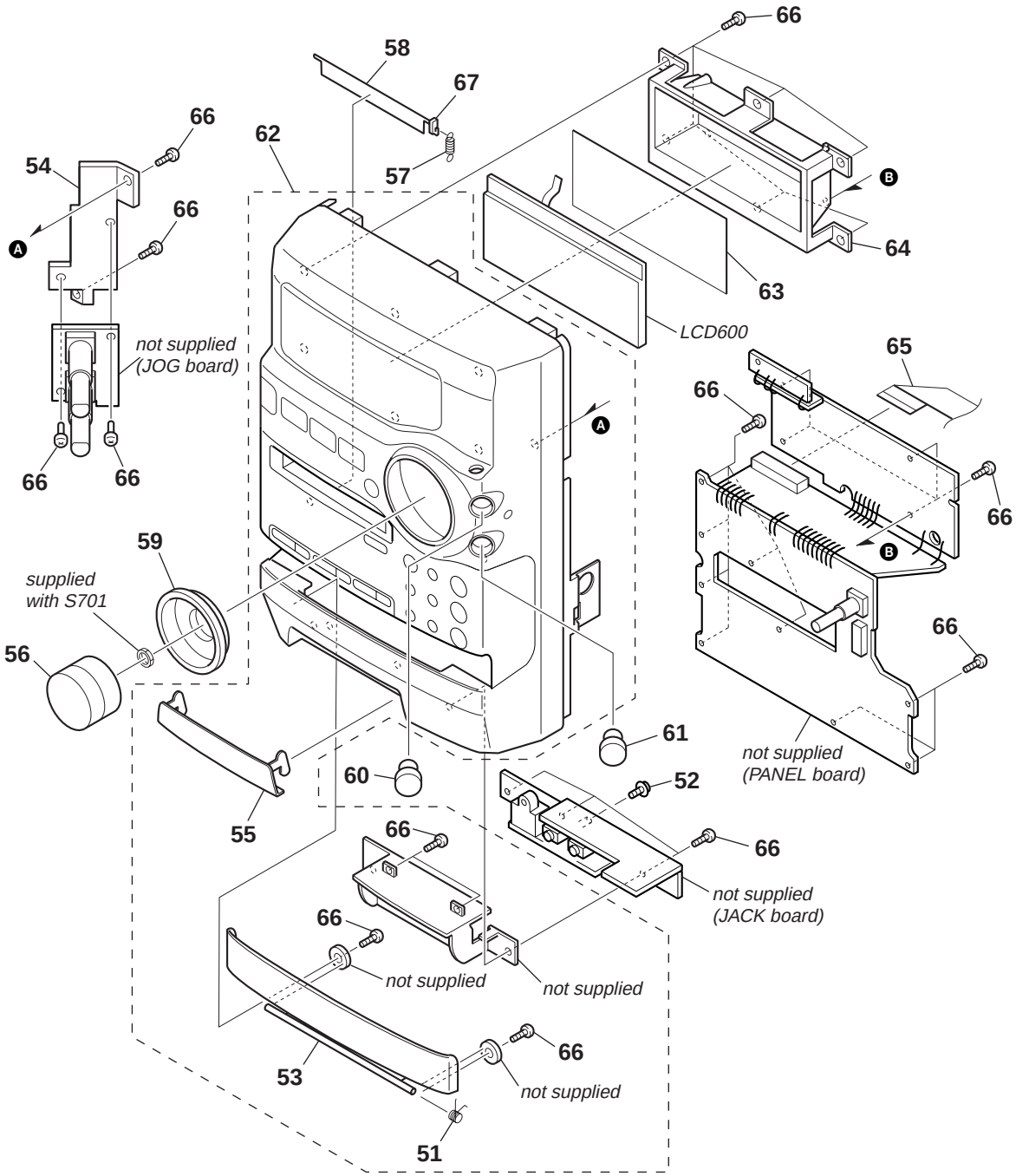
以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

(1) CASE SECTION



Ref. No.	Part No.	Description	Remark
1		MAIN BOARD, COMPLETE (KR)	
1	A-4476-151-A	MAIN BOARD, COMPLETE (HK)	
1	A-4476-156-A	MAIN BOARD, COMPLETE (JE)	
2	3-363-099-51	SCREW (CASE 3 TP2)	
3	4-229-860-01	CASE (SILVER)	
3	4-229-860-11	CASE (WHITE)	
4	1-773-002-11	WIRE (FLAT TYPE) (15 CORE)	
5	4-229-859-41	PANEL, BACK (HK)	
5	4-229-859-51	PANEL, BACK (KR)	
5	4-229-859-61	PANEL, BACK (JE)	
6	1-693-472-21	TUNER (JE)	
6	1-693-473-41	TUNER (HK, KR)	
M801	1-763-632-11	FAN, DC	

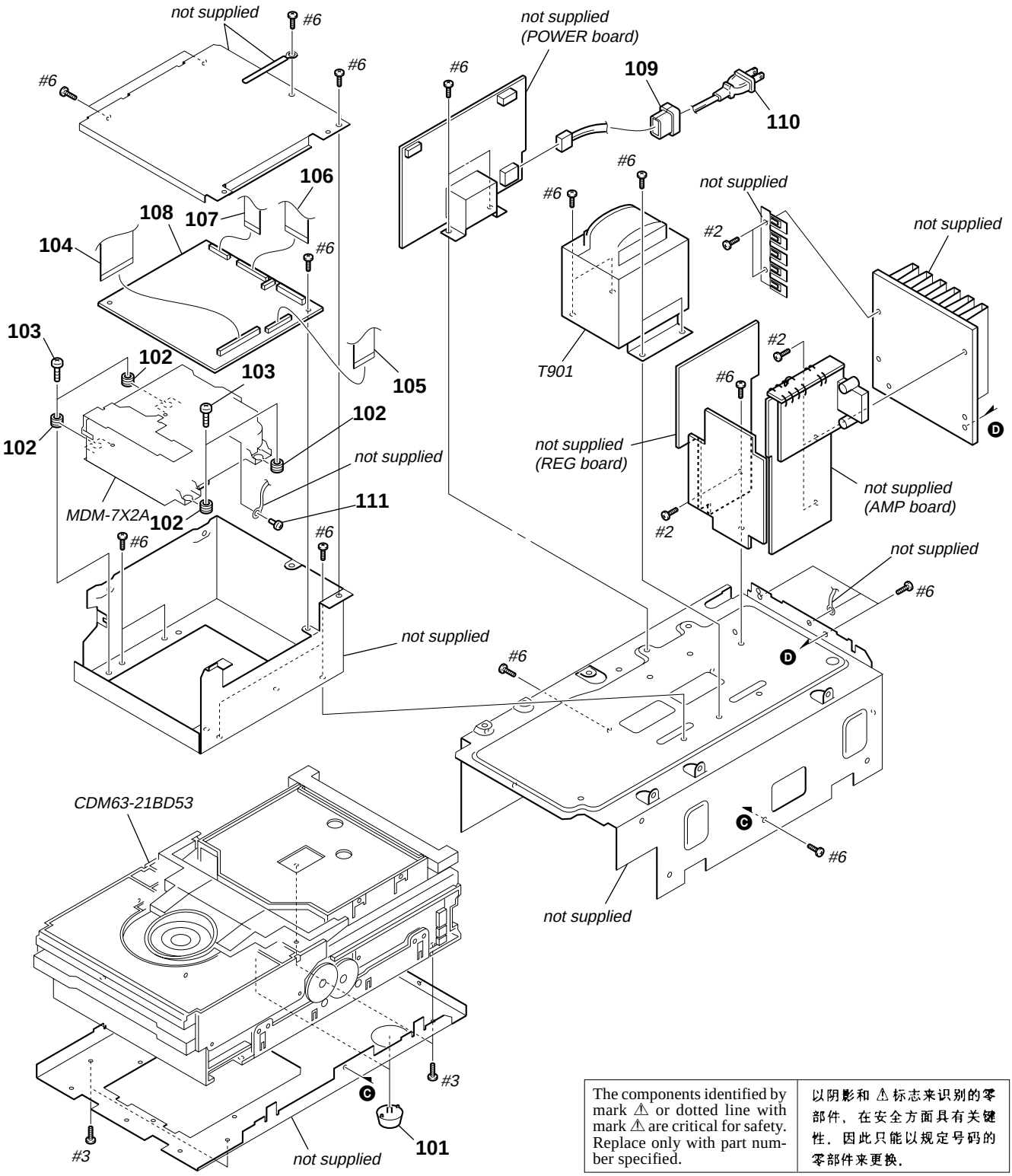
(2) FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark
51	4-229-836-01	SPRING (LID CD)	
52	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
53	4-229-835-01	LID (CD) (SILVER)	
53	4-229-835-11	LID (CD) (WHITE)	
54	4-229-843-01	BRACKET (JOG)	
55	4-229-837-01	LID (JACK) (SILVER)	
55	4-229-837-11	LID (JACK) (WHITE)	
56	X-4953-122-1	KNOB (VOLUME) ASSY	
57	4-229-834-01	SPRING, TENSION	
58	4-229-833-11	LID (MD)	
59	4-229-840-01	RING (VOL)	

Ref. No.	Part No.	Description	Remark
60	4-229-850-01	KNOB (JOG) (ENTER/YES. PUSH)	
61	4-229-850-11	KNOB (JOG) (◀◀ ▶▶. CURSOR)	
62	X-4953-112-1	PANEL ASSY, FRONT (SILVER)	
62	X-4953-113-1	PANEL ASSY, FRONT (WHITE)	
63	4-229-846-01	SHEET, DIFFUSION	
64	4-229-845-01	HOLDER (LCD)	
65	1-757-087-11	WIRE (FLAT TYPE) (23 CORE)	
66	4-951-620-01	SCREW (2.6X8), +BVTP	
67	4-230-264-01	HOOK (MD), SPRING	
LCD600	1-804-158-11	DISPLAY PANEL, LIQUID CRYSTAL	

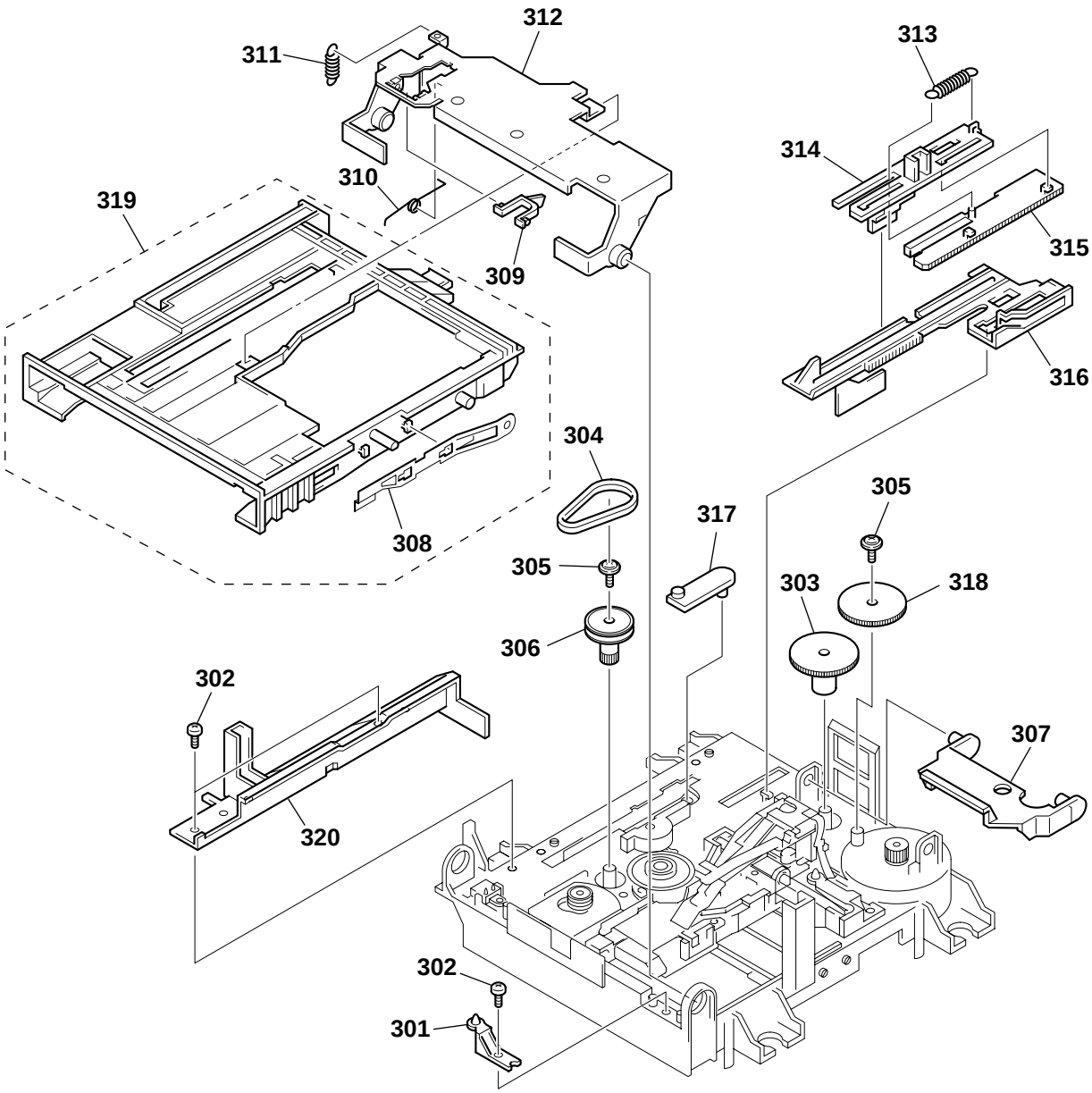
(3) CHASSIS SECTION



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

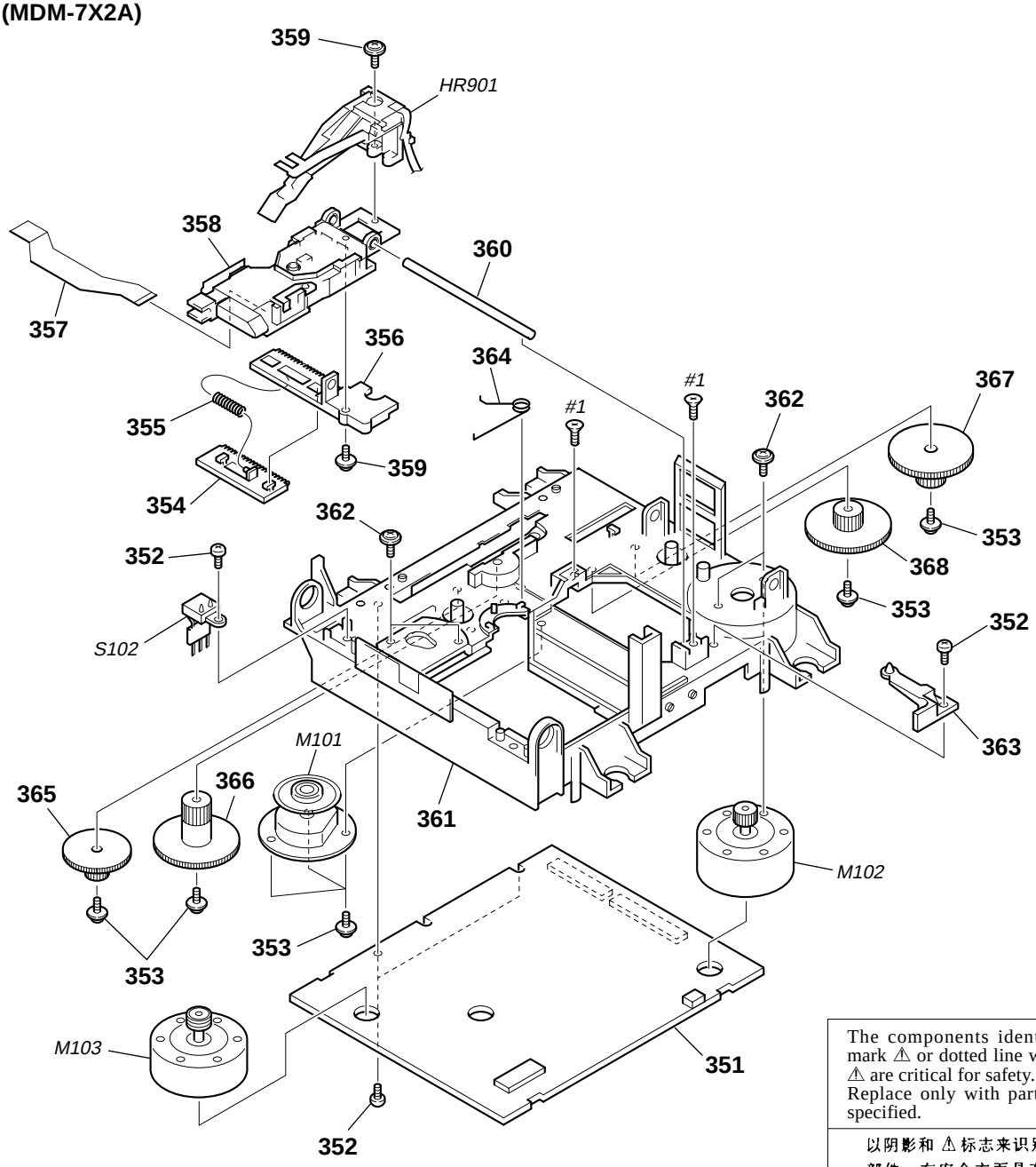
Ref. No.	Part No.	Description	Remark
101	4-993-867-01	FOOT (8)	
102	4-228-689-01	INSULATOR	
103	4-228-643-01	SCREW (+BVTTWH M3), STEP	
104	1-757-548-11	WIRE (FLAT TYPE) (31 CORE)	
105	1-757-086-11	WIRE (FLAT TYPE) (21 CORE)	
106	1-757-084-11	WIRE (FLAT TYPE) (27 CORE)	
107	1-757-085-11	WIRE (FLAT TYPE) (17 CORE)	
108	A-4476-153-A	MD DIGITAL BOARD, COMPLETE	
109	3-703-244-00	BUSHING (FBS001), CORD	
⚠110	1-575-651-21	CORD, POWER (HK, JE)	
⚠110	1-769-079-11	CORD, POWER (KR)	
111	4-231-113-01	SCREW (1.7X3), BTN	
⚠T901	1-435-937-11	TRANSFORMER, POWER (HK, KR)	
⚠T901	1-435-938-11	TRANSFORMER, POWER (JE)	

(4) MD MECHANISM DECK SECTION-1 (MDM-7X2A)



Ref. No.	Part No.	Description	Remark
* 301	4-996-267-01	BASE (BU-D)	
302	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI	
303	4-227-007-01	GEAR (SB)	
304	4-227-025-01	BELT (LOADING)	
305	3-372-761-01	SCREW (M1.7), TAPPING	
306	4-227-002-01	GEAR, PULLEY	
307	4-226-999-01	LEVER (HEAD)	
308	X-4952-665-1	SPRING (SHT) ASSY, LEAF	
309	4-228-923-01	LOCK (HOLDER)	
310	4-229-533-02	SPRING (STOPPER), TORSION	
311	4-227-012-01	SPRING (HOLDER), TENSION	
312	4-227-019-02	PLATE (HOLDER), RETAINER	
313	4-227-013-01	SPRING (EJ), TENSION	
314	4-226-995-01	SLIDER (EJ)	
315	4-226-996-01	LIMITER (EJ)	
316	4-226-997-04	SLIDER	
317	4-226-998-01	LEVER (CHG)	
318	4-227-006-01	GEAR (SA)	
319	A-4735-075-A	HOLDER ASSY	
320	4-226-994-01	GUIDE (L)	

(5) MD MECHANISM DECK SECTION-2 (MDM-7X2A)



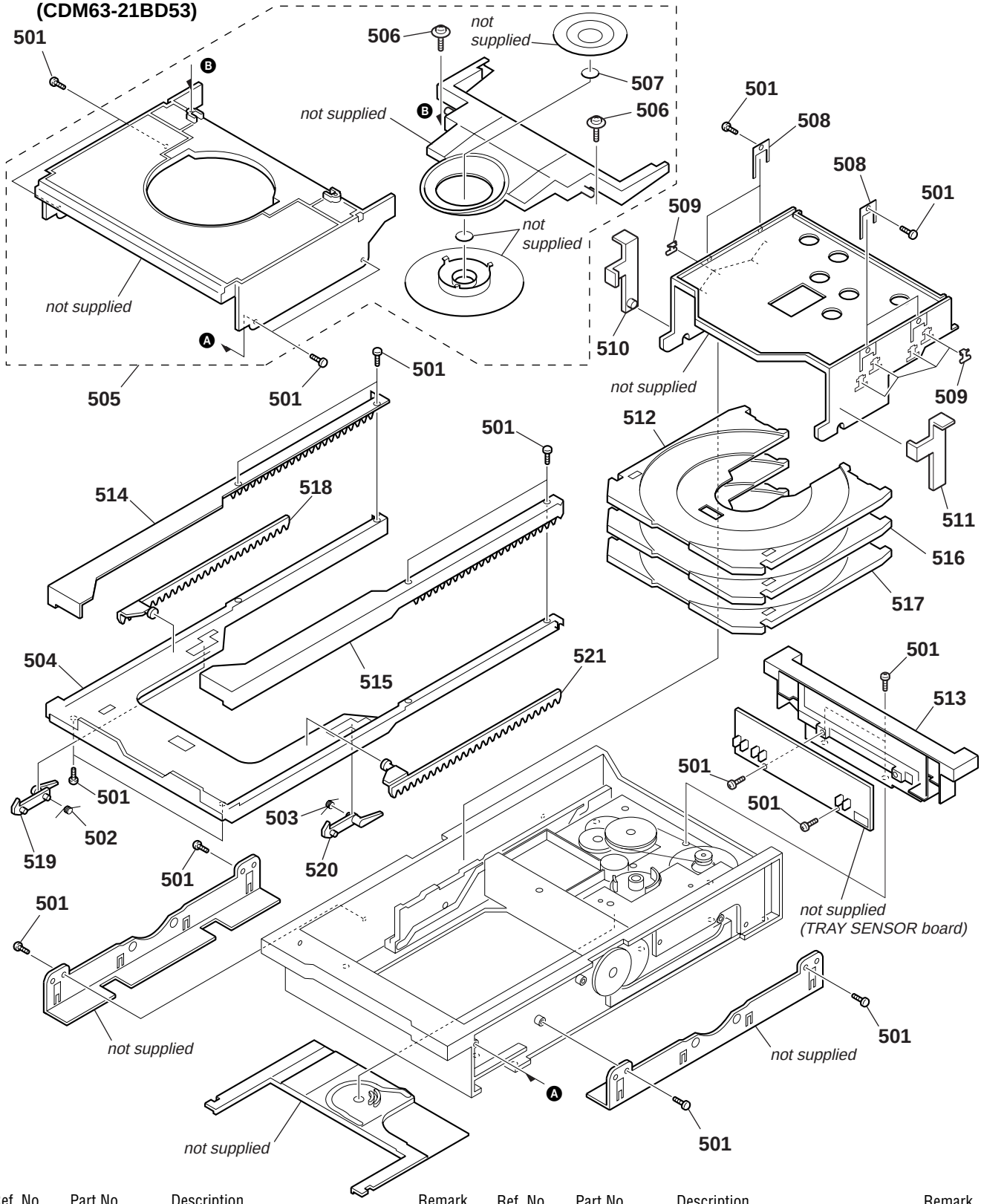
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

Ref. No.	Part No.	Description	Remark
351	A-4725-056-A	BD (MD) BOARD, COMPLETE	
352	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI	
353	3-372-761-01	SCREW (M1.7), TAPPING	
354	4-226-993-01	RACK	
355	4-227-014-01	SPRING (RACK), COMPRESSION	
356	4-226-992-01	BASE, SL	
357	1-678-514-11	FLEXIBLE BOARD	
⚠358	A-4672-976-A	OPTICAL PICK-UP KMS-262A/J1N	
359	4-988-560-01	SCREW (+P 1.7X6)	
360	4-996-265-01	SHAFT, MAIN	
361	4-226-989-01	CHASSIS	
362	4-211-036-01	SCREW (1.7X2.5), +PWH	

Ref. No.	Part No.	Description	Remark
363	4-226-990-01	BASE (BU-A)	
364	4-230-716-01	SPRING (SPDL), TORSION	
365	4-227-004-01	GEAR (LC)	
366	4-227-005-01	GEAR (LD)	
367	4-227-008-01	GEAR (SC)	
368	4-227-009-01	GEAR (SD)	
HR901	1-500-670-12	HEAD, OVER WRITE	
M101	A-4735-029-A	MOTOR ASSY, SPINDLE (for MD)	
M102	A-4672-900-A	MOTOR ASSY, SLED (for MD)	
M103	A-4672-975-A	MOTOR ASSY, LOADING (for MD)	
S102	1-771-957-11	SWITCH, PUSH (2 KEY) (REFLECT RATE DETECT, PROTECT DETECT)	

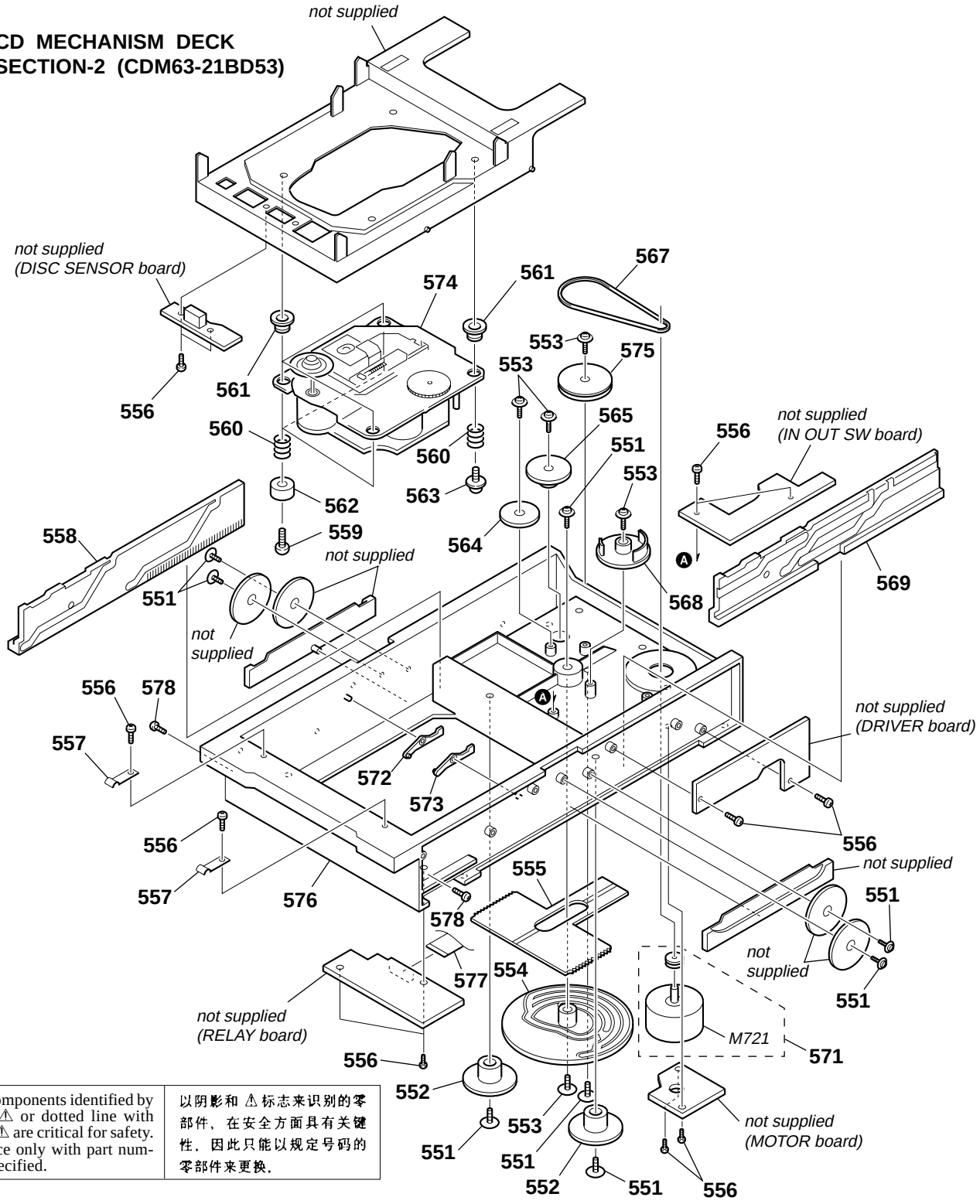
(6) CD MECHANISM DECK SECTION-1 (CDM63-21BD53)



Ref. No.	Part No.	Description	Remark
501	4-218-253-01	SCREW (M2.6), +BTTP	
502	4-228-996-01	SPRING (R), TORSION	
503	4-228-995-01	SPRING (L), TORSION	
504	4-228-972-02	TRAY (MAIN)	
505	A-4672-946-A	BASE (STABILIZER) ASSY, FITTING	
506	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
507	4-228-414-01	BRACKET (YOKE)	
508	4-228-980-01	SPRING (STOCKER), LEAF	
509	4-228-981-02	STOPPER (TRAY)	
510	4-228-963-01	SLIDER (STOCKER. L)	
511	4-228-964-01	SLIDER (STOCKER. R)	

Ref. No.	Part No.	Description	Remark
512	4-228-970-02	TRAY (SUB)	
513	4-229-001-01	HOLDER (SENSOR)	
514	4-228-978-02	COVER (TRAY. R)	
515	4-228-975-02	COVER (TRAY. L)	
516	4-228-970-12	TRAY (SUB)	
517	4-228-970-22	TRAY (SUB)	
518	4-228-986-02	RACK (TRAY.L)	
519	4-228-990-03	LEVER (SUB.L)	
520	4-228-991-03	LEVER (SUB.R)	
521	4-228-987-02	RACK (TRAY.R)	

(7) CD MECHANISM DECK SECTION-2 (CDM63-21BD53)



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

Ref. No.	Part No.	Description	Remark
551	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
552	4-229-002-02	GEAR (SLIDER)	
553	4-218-254-21	SCREW (M2.6), +PTPWH	
554	4-228-971-01	CAM	
555	4-228-974-02	RACK (CENTER)	
556	4-218-253-01	SCREW (M2.6), +BTTP	
557	4-228-969-01	SPRING (TABLE), LEAF	
558	4-228-977-01	SLIDER (BU. L)	
559	4-951-620-01	SCREW (2.6X8), +BVTP	
560	4-230-387-01	SPRING, CONE COIL	
561	4-230-386-01	INSULATOR (BU21)	
562	4-999-541-01	COLLAR (DAMPER)	
563	4-933-134-11	SCREW (+PTPWH M2.6X8)	
564	4-228-985-01	GEAR (PULLEY)	
565	4-228-997-02	GEAR (CAM)	
567	4-228-968-01	BELT	
568	4-228-998-01	GEAR (DETECTION)	
569	4-228-976-01	SLIDER (BU. R)	
571	X-4952-971-2	MOTOR ASSY	
572	4-228-999-02	LEVER (MAIN. L)	
573	4-229-000-02	LEVER (MAIN. R)	
⚠574	A-4677-295-A	BASE UNIT (BU-21BD53)	
575	4-229-003-01	PULLEY	
576	4-228-988-01	CHASSIS	
577	1-757-124-11	WIRE (FLAT TYPE) (21 CORE)	
578	4-218-253-71	SCREW (M2.6), +BTTP	
M721	1-541-632-11	MOTOR, DC (LOADING) (for CD)	

AMP

SECTION 8
ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F: nonflammable
- Abbreviation
  HK : Hong Kong model
  JE : Tourist model
  KR : Korean model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA. . : µA. . uPA. . : µPA. .
  uPB. . : µPB. . uPC. . : µPC. .
  uPD. . : µPD. .
- CAPACITORS
  uF: µF
- COILS
  uH: µH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
		AMP BOARD			
		**********			
	1-533-293-11	FUSE HOLDER			
		< CAPACITOR >			
C804	1-126-965-11	ELECT	22uF	20%	35V
C805	1-126-964-11	ELECT	10uF	20%	50V
C807	1-137-503-11	MYLAR	100PF	5%	50V
C808	1-104-664-11	ELECT	47uF	20%	10V
C810	1-130-495-00	MYLAR	0.1uF	5%	50V
C811	1-130-495-00	MYLAR	0.1uF	5%	50V
C813	1-126-959-11	ELECT	0.47uF	20%	50V
C814	1-126-042-11	ELECT	3300uF	20%	35V
C815	1-126-042-11	ELECT	3300uF	20%	35V
C816	1-104-665-11	ELECT	100uF	20%	25V
C818	1-130-495-00	MYLAR	0.1uF	5%	50V
C819	1-130-495-00	MYLAR	0.1uF	5%	50V
C820	1-130-495-00	MYLAR	0.1uF	5%	50V
C821	1-130-495-00	MYLAR	0.1uF	5%	50V
C822	1-107-715-11	ELECT	22uF	20%	16V
C826	1-137-362-11	PETP FILM	470PF	5%	50V
C851	1-126-949-11	ELECT	220uF	20%	35V
C852	1-126-961-11	ELECT	2.2uF	20%	50V
C853	1-104-665-11	ELECT	100uF	20%	10V
C854	1-126-965-11	ELECT	22uF	20%	35V
C855	1-113-342-11	CERAMIC	0.1uF		50V
C857	1-137-503-11	MYLAR	100PF	5%	50V
C858	1-104-664-11	ELECT	47uF	20%	10V
C859	1-113-342-11	CERAMIC	0.1uF		50V
C870	1-130-495-00	MYLAR	0.1uF	5%	50V
C871	1-130-495-00	MYLAR	0.1uF	5%	50V
C876	1-137-362-11	PETP FILM	470PF	5%	50V
		< CONNECTOR >			
* CN801	1-564-509-21	PLUG, CONNECTOR 6P			
* CN802	1-564-518-11	PLUG, CONNECTOR 3P			
* CN803	1-564-510-11	PLUG, CONNECTOR 7P			
CN806	1-766-921-11	CONNECTOR, BOARD TO BOARD 10P			
* CN851	1-564-517-11	PLUG, CONNECTOR 2P			
CN852	1-506-481-11	PIN, CONNECTOR 2P			

Ref. No.	Part No.	Description			Remark
		< DIODE >			
D801	8-719-911-19	DIODE 1SS133T-72			
D802	8-719-200-82	DIODE 11ES2-TA2B			
D803	8-719-028-23	DIODE D3SBA20-4101			
D851	8-719-200-82	DIODE 11ES2-TA2B			
D852	8-719-050-84	DIODE RB441Q-40T-72			
D853	8-719-911-19	DIODE 1SS133T-72			
D854	8-719-921-63	DIODE MTZJ-7.5B			
D855	8-719-947-24	DIODE MTZJ-T-72-6.2A			
		< FUSE >			
⚠F801	1-532-504-31	FUSE (T4AL/250V)			
⚠F802	1-532-504-31	FUSE (T4AL/250V)			
		< IC >			
IC801	8-759-333-24	IC LM1876TF			
		< COIL >			
L801	1-420-872-00	COIL, AIR-CORE			
L851	1-420-872-00	COIL, AIR-CORE			
		< TRANSISTOR >			
Q802	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q803	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q804	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q805	8-729-141-30	TRANSISTOR	2SC3623ATP-LK		
Q806	8-729-141-30	TRANSISTOR	2SC3623ATP-LK		
Q851	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q852	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q853	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
Q854	8-729-026-68	TRANSISTOR	2SD2525 (TP)		
		< RESISTOR >			
R801	1-260-096-11	CARBON	560	5%	1/2W
R802	1-249-421-11	CARBON	2.2K	5%	1/4W
R803	1-249-417-11	CARBON	1K	5%	1/4W
R804	1-260-096-11	CARBON	560	5%	1/2W
R805	1-249-441-11	CARBON	100K	5%	1/4W
R806	1-249-433-11	CARBON	22K	5%	1/4W
R807	1-249-437-11	CARBON	47K	5%	1/4W
R810	1-249-437-11	CARBON	47K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R811	1-249-417-11	CARBON	1K	5%	1/4W
R812	1-247-807-31	CARBON	100	5%	1/4W
R813	1-249-417-11	CARBON	1K	5%	1/4W
R814	1-249-437-11	CARBON	47K	5%	1/4W
R817	1-247-903-00	CARBON	1M	5%	1/4W
R818	1-249-429-11	CARBON	10K	5%	1/4W
R819	1-249-431-11	CARBON	15K	5%	1/4W
R820	1-249-431-11	CARBON	15K	5%	1/4W
R821	1-249-437-11	CARBON	47K	5%	1/4W
R822	1-249-438-11	CARBON	56K	5%	1/4W
R824	1-249-438-11	CARBON	56K	5%	1/4W
⚠R825	1-216-455-81	METAL OXIDE	560	5%	2W F
R826	1-260-076-11	CARBON	10	5%	1/2W
⚠R827	1-216-455-81	METAL OXIDE	560	5%	2W F
R828	1-260-076-11	CARBON	10	5%	1/2W
R832	1-249-441-11	CARBON	100K	5%	1/4W
R841	1-249-421-11	CARBON	2.2K	5%	1/4W
R842	1-249-421-11	CARBON	2.2K	5%	1/4W
R843	1-247-883-00	CARBON	150K	5%	1/4W
R844	1-249-437-11	CARBON	47K	5%	1/4W
R845	1-249-433-11	CARBON	22K	5%	1/4W
R851	1-260-096-11	CARBON	560	5%	1/2W
R852	1-249-421-11	CARBON	2.2K	5%	1/4W
R853	1-249-433-11	CARBON	22K	5%	1/4W
R854	1-260-096-11	CARBON	560	5%	1/2W
R855	1-247-887-00	CARBON	220K	5%	1/4W
R856	1-249-433-11	CARBON	22K	5%	1/4W
R857	1-249-437-11	CARBON	47K	5%	1/4W
R858	1-247-887-00	CARBON	220K	5%	1/4W
R859	1-249-425-11	CARBON	4.7K	5%	1/4W
R860	1-249-437-11	CARBON	47K	5%	1/4W
R861	1-249-417-11	CARBON	1K	5%	1/4W
R862	1-247-887-00	CARBON	220K	5%	1/4W
R863	1-249-417-11	CARBON	1K	5%	1/4W
R864	1-249-437-11	CARBON	47K	5%	1/4W
R871	1-249-431-11	CARBON	15K	5%	1/4W
R872	1-249-431-11	CARBON	15K	5%	1/4W
R876	1-260-076-11	CARBON	10	5%	1/2W
R878	1-260-076-11	CARBON	10	5%	1/2W
		< RELAY >			
RY801	1-755-170-11	RELAY (12V)			
		< TERMINAL >			
TM801		TERMINAL BOARD (4P) (SPEAKER IMPEDANCE USE 6-16Ω) (KR)			
TM801	1-694-750-11	TERMINAL BOARD (4P) (SPEAKER IMPEDANCE USE 6-16Ω) (EXCEPT KR)			
		< THERMISTOR >			
TPH851	1-801-829-11	THERMISTOR, POSITIVE			

****

Ref. No.	Part No.	Description			Remark
	A-4725-056-A	BD (MD) BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C101	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C102	1-135-259-11	TANTALUM CHIP	10uF	20%	6.3V
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C105	1-115-416-11	CERAMIC CHIP	0.001uF	5%	25V
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C107	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C108	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C109	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C110	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C111	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C112	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C113	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C114	1-125-837-11	CERAMIC CHIP	1uF	10%	6.3V
C115	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C116	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C117	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C118	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C119	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C120	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C121	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C125	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C128	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C131	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C132	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C133	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C141	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C142	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C143	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C144	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C145	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C146	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C147	1-117-720-11	CERAMIC CHIP	4.7uF		10V
C151	1-117-370-11	CERAMIC CHIP	10uF		10V
C152	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C153	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C154	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C155	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C156	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C157	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C158	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C159	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C160	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C161	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C162	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C163	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C164	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C165	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C166	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
C167	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C169	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C173	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C174	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C180	1-117-370-11	CERAMIC CHIP	10uF		10V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

BD (MD)

Ref. No.	Part No.	Description			Remark
C181	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C182	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C183	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C184	1-117-970-11	ELECT CHIP	22uF	20%	10V
C185	1-128-795-11	ELECT CHIP	470PF	10%	630V
C191	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C192	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C193	1-126-206-11	ELECT CHIP	100uF	20%	6.3V
C194	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C195	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C196	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1401	1-117-720-11	CERAMIC CHIP	4.7uF		10V
		< CONNECTOR >			
CN101	1-766-833-21	CONNECTOR, FFC/FPC (ZIF) 21P			
CN102	1-784-835-21	CONNECTOR, FFC (LIF (NON-ZIF)) 27P			
CN103	1-784-869-21	CONNECTOR, FFC (LIF (NON-ZIF)) 17P			
* CN104	1-580-055-21	PIN, CONNECTOR (SMD) 2P			
CN105	1-784-859-21	CONNECTOR, FFC (LIF (NON-ZIF)) 7P			
		< DIODE >			
D101	8-719-988-61	DIODE 1SS355TE-17			
D181	8-719-046-86	DIODE F1J6TP			
D183	8-719-046-86	DIODE F1J6TP			
		< IC >			
IC101	8-752-080-95	IC CXA2523AR			
IC102	8-759-473-51	IC TLV2361CDBV			
IC141	8-759-430-25	IC BH6511FS			
IC151	8-752-404-64	IC CXD2662R			
IC152	8-759-599-51	IC MSM51V17400D-50TS-K			
IC181	8-759-481-17	IC MC74ACT08DTR2			
IC190	8-759-677-64	IC L88M35T			
IC195	8-759-640-41	IC BR24C08F-E2			
		< SHORT >			
JW201	1-216-295-11	SHORT	0		
JW202	1-216-295-11	SHORT	0		
JW203	1-216-295-11	SHORT	0		
JW903	1-216-295-11	SHORT	0		
JW904	1-216-295-11	SHORT	0		
		< COIL/SHORT >			
L101	1-500-245-11	FERRITE	0uH		
L102	1-500-245-11	FERRITE	0uH		
L103	1-500-245-11	FERRITE	0uH		
L105	1-414-235-22	FERRITE	0uH		
L106	1-500-245-11	FERRITE	0uH		
L121	1-500-245-11	FERRITE	0uH		
L122	1-500-245-11	FERRITE	0uH		
L131	1-500-245-11	FERRITE	0uH		
L141	1-412-029-11	INDUCTOR CHIP	10uH		
L142	1-412-032-11	INDUCTOR CHIP	100uH		
L143	1-412-029-11	INDUCTOR CHIP	10uH		
L144	1-412-032-11	INDUCTOR CHIP	100uH		
L145	1-412-032-11	INDUCTOR CHIP	100uH		
L146	1-469-855-21	FERRITE	0uH		
L147	1-469-855-21	FERRITE	0uH		

Ref. No.	Part No.	Description			Remark
L161	1-500-245-11	FERRITE	0uH		
L171	1-500-245-11	FERRITE	0uH		
L180	1-469-855-21	FERRITE	0uH		
L181	1-469-855-21	FERRITE	0uH		
L182	1-500-245-11	FERRITE	0uH		
L183	1-216-296-00	SHORT	0		
L184	1-216-296-00	SHORT	0		
		< TRANSISTOR >			
Q101	8-729-403-35	TRANSISTOR	UN5113		
Q121	8-729-403-35	TRANSISTOR	UN5113		
Q122	8-729-101-07	TRANSISTOR	2SB798-T1DK		
Q131	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR		
Q132	8-729-903-10	TRANSISTOR	FMW1-T-148		
Q133	8-729-402-93	TRANSISTOR	UN5214-TX		
Q134	8-729-402-93	TRANSISTOR	UN5214-TX		
Q181	8-729-048-87	FET	2SJ518AZTR		
Q182	8-729-048-88	FET	2SK2788VYTR		
		< RESISTOR >			
R101	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R102	1-216-853-11	METAL CHIP	470K	5%	1/16W
R103	1-216-863-11	RES-CHIP	3.3M	5%	1/16W
R104	1-216-853-11	METAL CHIP	470K	5%	1/16W
R105	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R106	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R107	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R108	1-216-833-11	METAL CHIP	10K	5%	1/16W
R109	1-216-845-11	METAL CHIP	100K	5%	1/16W
R110	1-216-845-11	METAL CHIP	100K	5%	1/16W
R111	1-216-833-11	METAL CHIP	10K	5%	1/16W
R112	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R113	1-216-833-11	METAL CHIP	10K	5%	1/16W
R114	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R115	1-216-833-11	METAL CHIP	10K	5%	1/16W
R116	1-216-839-11	METAL CHIP	33K	5%	1/16W
R117	1-216-837-11	METAL CHIP	22K	5%	1/16W
R118	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R119	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W
R120	1-218-889-11	METAL CHIP	56K	0.5%	1/16W
R121	1-218-863-11	METAL CHIP	4.7K	0.5%	1/16W
R122	1-218-855-11	METAL CHIP	2.2K	0.5%	1/16W
R123	1-216-819-11	METAL CHIP	680	5%	1/16W
R124	1-216-809-11	METAL CHIP	100	5%	1/16W
R125	1-216-815-11	METAL CHIP	330	5%	1/16W
R126	1-216-819-11	METAL CHIP	680	5%	1/16W
R127	1-216-845-11	METAL CHIP	100K	5%	1/16W
R128	1-219-724-11	METAL CHIP	1	1%	1/4W
R129	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R130	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R131	1-216-837-11	METAL CHIP	22K	5%	1/16W
R132	1-216-840-11	METAL CHIP	39K	5%	1/16W
R133	1-216-821-11	METAL CHIP	1K	5%	1/16W
R134	1-216-821-11	METAL CHIP	1K	5%	1/16W
R135	1-216-821-11	METAL CHIP	1K	5%	1/16W
R136	1-216-302-00	METAL CHIP	2.7	5%	1/10W
R138	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R150	1-216-833-11	METAL CHIP	10K	5%	1/16W
R151	1-216-833-11	METAL CHIP	10K	5%	1/16W
R153	1-216-833-11	METAL CHIP	10K	5%	1/16W
R155	1-216-864-11	SHORT	0		
R156	1-216-864-11	SHORT	0		
R158	1-216-809-11	METAL CHIP	100	5%	1/16W
R162	1-216-833-11	METAL CHIP	10K	5%	1/16W
R167	1-216-833-11	METAL CHIP	10K	5%	1/16W
R168	1-216-845-11	METAL CHIP	100K	5%	1/16W
R169	1-216-855-11	METAL CHIP	680K	5%	1/16W
R170	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R171	1-216-821-11	METAL CHIP	1K	5%	1/16W
R173	1-216-821-11	METAL CHIP	1K	5%	1/16W
R174	1-216-811-11	METAL CHIP	150	5%	1/16W
R177	1-216-805-11	METAL CHIP	47	5%	1/16W
R179	1-216-295-11	SHORT	0		
R181	1-216-841-11	METAL CHIP	47K	5%	1/16W
R182	1-216-841-11	METAL CHIP	47K	5%	1/16W
R183	1-216-841-11	METAL CHIP	47K	5%	1/16W
R185	1-216-295-11	SHORT	0		
R195	1-216-833-11	METAL CHIP	10K	5%	1/16W
R196	1-216-833-11	METAL CHIP	10K	5%	1/16W
R197	1-216-833-11	METAL CHIP	10K	5%	1/16W
R218	1-216-864-11	SHORT	0		
		< SWITCH >			
S101	1-762-596-21	SWITCH, PUSH (1 KEY) (LIMIT IN)			
S103	1-771-956-21	SWITCH, PUSH (1 KEY) (PACK OUT)			
S104	1-771-955-21	SWITCH, PUSH (1 KEY) (PLAY POSITON)			
S105	1-771-955-21	SWITCH, PUSH (1 KEY) (REC POSITION)			
		< VIBRATOR >			
X171	1-781-569-21	OSCILLATOR, CRYSTAL (90.3168MHz)			
**********					
		DISC SENSOR BOARD			
		**********			
		< PHOTO REFLECTOR >			
IC751	8-749-924-30	PHOTO REFLECTOR GP2S28 (DISC IN DETECT)			
		< RESISTOR >			
R751	1-249-407-11	CARBON	150	5%	1/4W
**********					
		DRIVER BOARD			
		**********			
		< CAPACITOR >			
C701	1-124-261-00	ELECT	10uF	20%	50V
C705	1-124-261-00	ELECT	10uF	20%	50V
C706	1-164-159-11	CERAMIC	0.1uF		50V
C707	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
CN701	1-785-324-11	PIN, CONNECTOR (STRAIGHT) 12P			
CN702	1-785-328-11	PIN, CONNECTOR (LIGHT ANGRE) 2P			
CN703	1-785-331-11	PIN, CONNECTOR (LIGHT ANGLE) 5P			
CN704	1-785-329-11	PIN, CONNECTOR (LIGHT ANGLE) 3P			
CN705	1-785-329-21	PIN, CONNECTOR (LIGHT ANGLE) 3P			
		< IC >			
IC701	8-759-598-69	IC BA6956AN			
		< TRANSISTOR >			
Q701	8-729-029-66	TRANSISTOR RT1N141S-TP			
		< RESISTOR >			
R701	1-249-429-11	CARBON	10K	5%	1/4W
R702	1-249-401-11	CARBON	47	5%	1/4W
R705	1-249-435-11	CARBON	33K	5%	1/4W
R706	1-249-417-11	CARBON	1K	5%	1/4W
R707	1-249-429-11	CARBON	10K	5%	1/4W
**********					
		IN OUT SW BOARD			
		**********			
		< SWITCH >			
S741	1-771-821-11	SWITCH, PUSH (1 KEY) (IN)			
S742	1-771-821-11	SWITCH, PUSH (1 KEY) (OUT)			
**********					
		JACK BOARD			
		**********			
		< CAPACITOR >			
C720	1-162-294-31	CERAMIC	0.001uF	10%	50V
C721	1-162-294-31	CERAMIC	0.001uF	10%	50V
C722	1-162-294-31	CERAMIC	0.001uF	10%	50V
C723	1-162-290-31	CERAMIC	470PF	10%	50V
C724	1-162-290-31	CERAMIC	470PF	10%	50V
C728	1-113-342-11	CERAMIC	0.1uF		50V
C729	1-162-306-11	CERAMIC	0.01uF	30%	16V
C730	1-162-290-31	CERAMIC	470PF	10%	50V
C735	1-162-306-11	CERAMIC	0.01uF	30%	16V
		< DIODE >			
D716	8-719-911-19	DIODE 1SS133T-72			
D719	8-719-911-19	DIODE 1SS133T-72			
D720	8-719-911-19	DIODE 1SS133T-72			
D721	8-719-911-19	DIODE 1SS133T-72			
D723	8-719-911-19	DIODE 1SS133T-72			
D724	8-719-911-19	DIODE 1SS133T-72			
D725	8-719-947-31	DIODE MTZJ-T-72-7.5			
D726	8-719-947-31	DIODE MTZJ-T-72-7.5			
		< GROUND TERMINAL >			
EP702	1-537-771-21	TERMINAL BOARD, GROUND			
		< JACK >			
J701	1-794-702-11	JACK, HEADPHONE (PHONES)			
J702	1-794-702-11	JACK, HEADPHONE (ANALOG IN)			
J703	1-774-136-11	CONNECTOR, ROUND TYPE 6P (PC LINK/KEY BOARD)			

JACK **JOG** **MAIN**

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R752	1-249-441-11	CARBON	100K	5%	1/4W
R753	1-249-441-11	CARBON	100K	5%	1/4W
R755	1-249-425-11	CARBON	4.7K	5%	1/4W
R756	1-249-425-11	CARBON	4.7K	5%	1/4W
**********					
		JOG BOARD			
		**********			
		< LED >			
D717	8-719-058-03	LED SEL5423E-TP15 (ENTER/YES)			
D718	8-719-058-03	LED SEL5423E-TP15 (CURSOR ◀◀ ◀▬▬▶ ▶▶)			
		< RESISTOR >			
R758	1-249-419-11	CARBON	1.5K	5%	1/4W
R759	1-249-421-11	CARBON	2.2K	5%	1/4W
R760	1-247-843-11	CARBON	3.3K	5%	1/4W
		< SWITCH >			
S723	1-762-875-21	SWITCH, KEYBOARD (MENU/NO)			
S724	1-762-875-21	SWITCH, KEYBOARD (CLEAR)			
S725	1-771-963-11	SWITCH (CURSOR ◀◀ ◀▬▬▶ ▶▶)			
S726	1-476-239-11	ENCODER, ROTARY (ENTER/YES)			
**********					
		MAIN BOARD, COMPLETE (KR)			
	A-4476-151-A	MAIN BOARD, COMPLETE (HK)			
	A-4476-156-A	MAIN BOARD, COMPLETE (JE)			
		**********			
		< BATTERY >			
BT501	1-528-938-11	BATTERY, LITHIUM ION SECONDARY			
		< CAPACITOR >			
C121	1-104-665-11	ELECT	100uF	20%	10V
C301	1-110-335-11	MYLAR	100PF	5%	50V
C302	1-110-335-11	MYLAR	100PF	5%	50V
C303	1-110-335-11	MYLAR	100PF	5%	50V
C304	1-110-335-11	MYLAR	100PF	5%	50V
C305	1-110-339-11	MYLAR	220PF	5%	50V
C307	1-126-964-11	ELECT	10uF	20%	50V
C308	1-126-965-11	ELECT	22uF	20%	50V
C309	1-126-964-11	ELECT	10uF	20%	50V
C310	1-126-964-11	ELECT	10uF	20%	50V
C311	1-136-165-00	MYLAR	0.1uF	5%	50V
C312	1-136-169-00	MYLAR	0.22uF	5%	50V
C313	1-130-473-00	MYLAR	0.0015uF	5%	50V
C314	1-126-961-11	ELECT	2.2uF	20%	50V
C315	1-136-165-00	MYLAR	0.1uF	5%	50V
C316	1-136-165-00	MYLAR	0.1uF	5%	50V
C317	1-126-964-11	ELECT	10uF	20%	50V
C321	1-162-290-31	CERAMIC	470PF	10%	50V
C322	1-162-290-31	CERAMIC	470PF	10%	50V
C351	1-110-335-11	MYLAR	100PF	5%	50V
C352	1-110-335-11	MYLAR	100PF	5%	50V
C353	1-110-335-11	MYLAR	100PF	5%	50V
C354	1-110-335-11	MYLAR	100PF	5%	50V

Ref. No.	Part No.	Description			Remark
C355	1-110-339-11	MYLAR	220PF	5%	50V
C357	1-126-964-11	ELECT	10uF	20%	50V
C358	1-126-965-11	ELECT	22uF	20%	50V
C359	1-126-964-11	ELECT	10uF	20%	50V
C360	1-126-964-11	ELECT	10uF	20%	50V
C361	1-136-165-00	MYLAR	0.1uF	5%	50V
C362	1-136-169-00	MYLAR	0.22uF	5%	50V
C363	1-130-473-00	MYLAR	0.0015uF	5%	50V
C364	1-126-961-11	ELECT	2.2uF	20%	50V
C365	1-136-165-00	MYLAR	0.1uF	5%	50V
C366	1-136-165-00	MYLAR	0.1uF	5%	50V
C367	1-126-964-11	ELECT	10uF	20%	50V
C402	1-126-960-11	ELECT	1uF	20%	50V
C403	1-126-960-11	ELECT	1uF	20%	50V
C405	1-164-159-11	CERAMIC	0.1uF		50V
C452	1-126-960-11	ELECT	1uF	20%	50V
C453	1-126-960-11	ELECT	1uF	20%	50V
C502	1-162-306-11	CERAMIC	0.01uF	30%	16V
C503	1-162-306-11	CERAMIC	0.01uF	30%	16V
C507	1-126-964-11	ELECT	10uF	20%	50V
C508	1-126-927-11	ELECT	2200uF	20%	10V
C509	1-164-159-11	CERAMIC	0.1uF		50V
C510	1-126-768-11	ELECT	2200uF	20%	16V
C511	1-126-768-11	ELECT	2200uF	20%	16V
C512	1-126-934-11	ELECT	220uF	20%	10V
C513	1-126-926-11	ELECT	1000uF	20%	10V
C514	1-126-964-11	ELECT	10uF	20%	50V
C515	1-126-927-11	ELECT	2200uF	20%	10V
C516	1-126-927-11	ELECT	2200uF	20%	10V
C517	1-162-306-11	CERAMIC	0.01uF	30%	16V
C518	1-162-306-11	CERAMIC	0.01uF	30%	16V
C519	1-126-964-11	ELECT	10uF	20%	50V
C529	1-126-964-11	ELECT	10uF	20%	50V
C531	1-136-153-00	FILM	0.01uF	5%	50V
C532	1-126-933-11	ELECT	100uF	20%	16V
C534	1-126-964-11	ELECT	10uF	20%	50V
C535	1-130-477-00	MYLAR	0.0033uF	5%	50V
C558	1-126-934-11	ELECT	220uF	20%	10V
C559	1-136-165-00	MYLAR	0.1uF	5%	50V
C560	1-162-286-31	CERAMIC	220PF	10%	50V
C561	1-162-286-31	CERAMIC	220PF	10%	50V
C562	1-162-286-31	CERAMIC	220PF	10%	50V
C566	1-136-165-00	MYLAR	0.1uF	5%	50V
C570	1-126-959-11	ELECT	0.47uF	20%	50V
C571	1-126-959-11	ELECT	0.47uF	20%	50V
C575	1-162-306-11	CERAMIC	0.01uF	30%	16V
C580	1-162-306-11	CERAMIC	0.01uF	30%	16V
C581	1-126-964-11	ELECT	10uF	20%	50V
C599	1-162-205-31	CERAMIC	18PF	5%	50V
C600	1-162-207-31	CERAMIC	22PF	5%	50V
C601	1-162-294-31	CERAMIC	0.001uF	10%	50V
C602	1-104-665-11	ELECT	100uF	20%	10V
C604	1-126-924-11	ELECT	330uF	20%	10V
C605	1-164-159-11	CERAMIC	0.1uF		50V
C606	1-126-960-11	ELECT	1uF	20%	50V
C607	1-164-159-11	CERAMIC	0.1uF		50V
C608	1-162-306-11	CERAMIC	0.01uF	30%	16V

Ref. No.	Part No.	Description			Remark
C609	1-162-306-11	CERAMIC	0.01uF	30%	16V
C611	1-162-306-11	CERAMIC	0.01uF	30%	16V
C612	1-164-159-11	CERAMIC	0.1uF		50V
C613	1-162-306-11	CERAMIC	0.01uF	30%	16V
C615	1-164-159-11	CERAMIC	0.1uF		50V
C621	1-126-964-11	ELECT	10uF	20%	50V
C622	1-126-960-11	ELECT	1uF	20%	50V
C636	1-104-665-11	ELECT	100uF	20%	10V
		< CONNECTOR >			
CN503	1-784-776-11	CONNECTOR, FFC 15P			
* CN504	1-506-486-11	PIN, CONNECTOR 7P			
CN505	1-568-955-11	PIN, CONNECTOR 6P			
CN506	1-784-792-11	CONNECTOR, FFC 31P			
CN508	1-784-784-11	CONNECTOR, FFC 23P			
		< DIODE >			
D402	8-719-050-84	DIODE RB441Q-40T-72			
D403	8-719-050-84	DIODE RB441Q-40T-72			
D452	8-719-050-84	DIODE RB441Q-40T-72			
D453	8-719-050-84	DIODE RB441Q-40T-72			
D501	8-719-109-85	DIODE RD5.1ES-T2B2			
D503	8-719-911-19	DIODE 1SS133T-72			
D504	8-719-109-85	DIODE RD5.1ES-T2B2			
D505	8-719-911-19	DIODE 1SS133T-72			
D506	8-719-911-19	DIODE 1SS133T-72			
D507	8-719-911-19	DIODE 1SS133T-72			
D508	8-719-911-19	DIODE 1SS133T-72			
D509	8-719-911-19	DIODE 1SS133T-72			
D510	8-719-911-19	DIODE 1SS133T-72			
D511	8-719-200-82	DIODE 11ES2-TA2B			
D512	8-719-911-19	DIODE 1SS133T-72			
D513	8-719-911-19	DIODE 1SS133T-72			
D514	8-719-050-84	DIODE RB441Q-40T-72			
D515	8-719-911-19	DIODE 1SS133T-72			
D516	8-719-911-19	DIODE 1SS133T-72			
D518	8-719-911-19	DIODE 1SS133T-72			
D519	8-719-050-84	DIODE RB441Q-40T-72			
D521	8-719-911-19	DIODE 1SS133T-72			
D522	8-719-911-19	DIODE 1SS133T-72			
D523	8-719-911-19	DIODE 1SS133T-72			
D524	8-719-911-19	DIODE 1SS133T-72			
D525	8-719-947-31	DIODE MTZJ-T-72-7.5			
D526	8-719-947-31	DIODE MTZJ-T-72-7.5			
D551	8-719-911-19	DIODE 1SS133T-72			
D552	8-719-911-19	DIODE 1SS133T-72			
		< GROUND TERMINAL >			
EP802	1-537-771-21	TERMINAL BOARD, GROUND			
		< COIL >			
FB500	1-412-473-21	INDUCTOR 0uH			
		< IC >			
IC121	8-749-017-36	IC TORX-179 (DIGITAL OPTICAL IN)			
IC401	8-759-700-42	IC NJM2904D			
IC501	8-759-239-25	IC TC74HC4066AF (EL)			
IC502	8-759-566-46	IC P82B715PN			
IC505	8-759-494-40	IC M62428AFP600C			
IC506	8-759-683-63	IC uPDSS3033AYGF-M11-3BA			
IC508	8-759-637-58	IC PST592C-T			
IC601	8-759-481-02	IC M62016L			
		< JACK >			
J501	1-764-593-21	JACK, PIN 2P (TAPE IN) (KR)			
J501	1-764-767-21	JACK, PIN 2P (TAPE IN) (EXCEPT KR)			
J502	1-764-593-21	JACK, PIN 2P (TAPE OUT) (KR)			
J502	1-764-767-21	JACK, PIN 2P (TAPE OUT) (EXCEPT KR)			
J503	1-774-136-11	CONNECTOR, ROUND TYPE 6P (PC LINK)			
		< TRANSISTOR >			
Q158	8-729-900-80	TRANSISTOR UN4211-TA			
Q159	8-729-422-57	TRANSISTOR UN4111-TA			
Q160	8-729-422-57	TRANSISTOR UN4111-TA			
Q301	8-729-620-05	TRANSISTOR 2SC2603TP-EF			
Q351	8-729-620-05	TRANSISTOR 2SC2603TP-EF			
Q501	8-729-141-30	TRANSISTOR 2SC3623ATP-LK			
Q502	8-729-141-30	TRANSISTOR 2SC3623ATP-LK			
Q503	8-729-048-96	FET 2SK1825			
Q504	8-729-048-96	FET 2SK1825			
Q511	8-729-422-57	TRANSISTOR UN4111-TA			
Q512	8-729-422-57	TRANSISTOR UN4111-TA			
Q513	8-729-900-80	TRANSISTOR UN4211-TA			
Q521	8-729-620-05	TRANSISTOR 2SC2603TP-EF			
Q601	8-729-620-05	TRANSISTOR 2SC2603TP-EF			
Q671	8-729-422-57	TRANSISTOR UN4111-TA			
Q672	8-729-141-30	TRANSISTOR 2SC3623ATP-LK			
Q673	8-729-141-30	TRANSISTOR 2SC3623ATP-LK			
Q674	8-729-422-57	TRANSISTOR UN4111-TA			
		< RESISTOR >			
R121	1-249-413-11	CARBON	470	5%	1/4W
R301	1-249-417-11	CARBON	1K	5%	1/4W
R302	1-249-441-11	CARBON	100K	5%	1/4W
R303	1-249-441-11	CARBON	100K	5%	1/4W
R305	1-249-417-11	CARBON	1K	5%	1/4W
R306	1-249-431-11	CARBON	15K	5%	1/4W
R307	1-249-441-11	CARBON	100K	5%	1/4W
R308	1-249-417-11	CARBON	1K	5%	1/4W
R309	1-249-441-11	CARBON	100K	5%	1/4W
R310	1-249-417-11	CARBON	1K	5%	1/4W
R311	1-249-441-11	CARBON	100K	5%	1/4W
R312	1-247-885-00	CARBON	180K	5%	1/4W
R313	1-249-433-11	CARBON	22K	5%	1/4W
R314	1-247-903-00	CARBON	1M	5%	1/4W
R315	1-249-427-11	CARBON	6.8K	5%	1/4W
R351	1-249-417-11	CARBON	1K	5%	1/4W
R352	1-249-441-11	CARBON	100K	5%	1/4W
R353	1-249-441-11	CARBON	100K	5%	1/4W
R355	1-249-417-11	CARBON	1K	5%	1/4W
R356	1-249-431-11	CARBON	15K	5%	1/4W
R357	1-249-441-11	CARBON	100K	5%	1/4W
R358	1-249-417-11	CARBON	1K	5%	1/4W
R359	1-249-441-11	CARBON	100K	5%	1/4W
R360	1-249-417-11	CARBON	1K	5%	1/4W
R361	1-249-441-11	CARBON	100K	5%	1/4W

MAIN

Ref. No.	Part No.	Description			Remark
R362	1-247-885-00	CARBON	180K	5%	1/4W
R363	1-249-433-11	CARBON	22K	5%	1/4W
R364	1-247-903-00	CARBON	1M	5%	1/4W
R365	1-249-427-11	CARBON	6.8K	5%	1/4W
R405	1-249-429-11	CARBON	10K	5%	1/4W
R407	1-249-441-11	CARBON	100K	5%	1/4W
R455	1-249-429-11	CARBON	10K	5%	1/4W
R457	1-249-441-11	CARBON	100K	5%	1/4W
R501	1-247-903-00	CARBON	1M	5%	1/4W
R502	1-249-413-11	CARBON	470	5%	1/4W
R503	1-249-421-11	CARBON	2.2K	5%	1/4W
R504	1-249-429-11	CARBON	10K	5%	1/4W
R505	1-247-807-31	CARBON	100	5%	1/4W
R506	1-249-429-11	CARBON	10K	5%	1/4W
R507	1-249-417-11	CARBON	1K	5%	1/4W
R508	1-249-417-11	CARBON	1K	5%	1/4W
R509	1-249-417-11	CARBON	1K	5%	1/4W
R510	1-249-421-11	CARBON	2.2K	5%	1/4W
R511	1-249-381-11	CARBON	1	5%	1/4W
R513	1-249-425-11	CARBON	4.7K	5%	1/4W
R514	1-249-425-11	CARBON	4.7K	5%	1/4W
R516	1-249-429-11	CARBON	10K	5%	1/4W
R517	1-249-429-11	CARBON	10K	5%	1/4W
R518	1-249-441-11	CARBON	100K	5%	1/4W
R519	1-247-807-31	CARBON	100	5%	1/4W
R520	1-247-807-31	CARBON	100	5%	1/4W
R521	1-249-437-11	CARBON	47K	5%	1/4W
R522	1-249-411-11	CARBON	330	5%	1/4W
R523	1-249-393-11	CARBON	10	5%	1/4W
R524	1-249-429-11	CARBON	10K	5%	1/4W
R528	1-249-421-11	CARBON	2.2K	5%	1/4W
R529	1-249-421-11	CARBON	2.2K	5%	1/4W
R530	1-249-435-11	CARBON	33K	5%	1/4W
R539	1-249-393-11	CARBON	10	5%	1/4W
R540	1-249-433-11	CARBON	22K	5%	1/4W
R541	1-249-433-11	CARBON	22K	5%	1/4W
R542	1-249-429-11	CARBON	10K	5%	1/4W
R543	1-249-429-11	CARBON	10K	5%	1/4W
R546	1-249-441-11	CARBON	100K	5%	1/4W
R547	1-249-441-11	CARBON	100K	5%	1/4W
R548	1-249-417-11	CARBON	1K	5%	1/4W
R549	1-249-441-11	CARBON	100K	5%	1/4W
R550	1-249-417-11	CARBON	1K	5%	1/4W
R551	1-249-417-11	CARBON	1K	5%	1/4W
R552	1-247-807-31	CARBON	100	5%	1/4W
R553	1-247-807-31	CARBON	100	5%	1/4W
R554	1-249-441-11	CARBON	100K	5%	1/4W
R556	1-249-417-11	CARBON	1K	5%	1/4W
R557	1-249-437-11	CARBON	47K	5%	1/4W
R558	1-249-429-11	CARBON	10K	5%	1/4W
R559	1-249-433-11	CARBON	22K	5%	1/4W
R567	1-249-411-11	CARBON	330	5%	1/4W
R569	1-249-417-11	CARBON	1K	5%	1/4W
R572	1-247-807-31	CARBON	100	5%	1/4W
R573	1-247-807-31	CARBON	100	5%	1/4W
R574	1-249-417-11	CARBON	1K	5%	1/4W
R588	1-249-409-11	CARBON	220	5%	1/4W
R589	1-249-409-11	CARBON	220	5%	1/4W
R590	1-249-417-11	CARBON	1K	5%	1/4W
R591	1-247-843-11	CARBON	3.3K	5%	1/4W
R592	1-249-429-11	CARBON	10K	5%	1/4W
R598	1-249-417-11	CARBON	1K	5%	1/4W
R601	1-247-891-00	CARBON	330K	5%	1/4W
R603	1-247-807-31	CARBON	100	5%	1/4W
R604	1-247-807-31	CARBON	100	5%	1/4W
R605	1-249-417-11	CARBON	1K	5%	1/4W
R606	1-247-807-31	CARBON	100	5%	1/4W
R607	1-249-433-11	CARBON	22K	5%	1/4W
R608	1-249-417-11	CARBON	1K	5%	1/4W
R609	1-249-437-11	CARBON	47K	5%	1/4W
R610	1-249-437-11	CARBON	47K	5%	1/4W
R611	1-249-429-11	CARBON	10K	5%	1/4W
R612	1-247-887-00	CARBON	220K	5%	1/4W
R613	1-249-441-11	CARBON	100K	5%	1/4W
R614	1-249-433-11	CARBON	22K	5%	1/4W
R618	1-249-416-11	CARBON	820	5%	1/4W
R621	1-249-417-11	CARBON	1K	5%	1/4W
R622	1-249-417-11	CARBON	1K	5%	1/4W
R623	1-249-417-11	CARBON	1K	5%	1/4W
R624	1-249-417-11	CARBON	1K	5%	1/4W
R625	1-249-429-11	CARBON	10K	5%	1/4W
R626	1-249-429-11	CARBON	10K	5%	1/4W
R627	1-249-429-11	CARBON	10K	5%	1/4W
R628	1-249-429-11	CARBON	10K	5%	1/4W
R629	1-249-429-11	CARBON	10K	5%	1/4W
R630	1-249-429-11	CARBON	10K	5%	1/4W
R631	1-249-417-11	CARBON	1K	5%	1/4W
R636	1-249-417-11	CARBON	1K	5%	1/4W
R637	1-247-807-31	CARBON	100	5%	1/4W
R638	1-247-807-31	CARBON	100	5%	1/4W
R639	1-247-807-31	CARBON	100	5%	1/4W
R640	1-247-807-31	CARBON	100	5%	1/4W
R641	1-247-807-31	CARBON	100	5%	1/4W
R642	1-247-807-31	CARBON	100	5%	1/4W
R643	1-247-807-31	CARBON	100	5%	1/4W
R645	1-249-429-11	CARBON	10K	5%	1/4W
R646	1-249-431-11	CARBON	15K	5%	1/4W
R647	1-249-431-11	CARBON	15K	5%	1/4W
R648	1-249-431-11	CARBON	15K	5%	1/4W
R649	1-247-807-31	CARBON	100	5%	1/4W
R650	1-249-429-11	CARBON	10K	5%	1/4W
R651	1-249-429-11	CARBON	10K	5%	1/4W
R652	1-249-429-11	CARBON	10K	5%	1/4W (JE)
R653	1-249-429-11	CARBON	10K	5%	1/4W
R655	1-249-429-11	CARBON	10K	5%	1/4W
R656	1-249-429-11	CARBON	10K	5%	1/4W
R657	1-249-429-11	CARBON	10K	5%	1/4W
R659	1-249-429-11	CARBON	10K	5%	1/4W
R660	1-249-429-11	CARBON	10K	5%	1/4W
R662	1-249-429-11	CARBON	10K	5%	1/4W (HK, KR)
R664	1-249-429-11	CARBON	10K	5%	1/4W
R667	1-249-429-11	CARBON	10K	5%	1/4W
R671	1-249-429-11	CARBON	10K	5%	1/4W

Ref. No.	Part No.	Description			Remark
R672	1-249-413-11	CARBON	470	5%	1/4W
R673	1-249-413-11	CARBON	470	5%	1/4W
R674	1-249-425-11	CARBON	4.7K	5%	1/4W
R846	1-249-421-11	CARBON	2.2K	5%	1/4W
		< THERMISTOR (POSITIVE) >			
THP502	1-803-350-21	THERMISTOR, POSITIVE			
		< VIBRATOR >			
X502	1-567-098-41	VIBRATOR, CRYSTAL (32.768kHz)			
X503	1-781-107-21	VIBRATOR, SERAMIC (16MHz)			

****

	A-4476-153-A	MD DIGITAL BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C1001	1-126-335-11	ELECT	220uF	20%	10V
C1002	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1004	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1005	1-128-526-11	ELECT	220uF	20%	10V
C1006	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1007	1-126-052-11	ELECT	100uF	20%	10V
C1008	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1009	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1011	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1012	1-124-721-11	ELECT	10uF	20%	50V
C1014	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1015	1-126-335-11	ELECT	220uF	20%	10V
C1016	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1017	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1018	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1019	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C1020	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C1021	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1022	1-126-933-11	ELECT	100uF	20%	16V
C1023	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1024	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1025	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1026	1-126-933-11	ELECT	100uF	20%	16V
C1027	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1030	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1034	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1035	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1037	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C1038	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C1039	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C1040	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C1041	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C1044	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C1045	1-126-933-11	ELECT	100uF	20%	16V
C1046	1-136-153-00	FILM	0.01uF	5%	50V
C1047	1-136-153-00	FILM	0.01uF	5%	50V
C1048	1-126-935-11	ELECT	470uF	20%	10V
C1049	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1050	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1051	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C1102	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1103	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1104	1-126-960-11	ELECT	1uF	20%	50V
C1105	1-126-933-11	ELECT	100uF	20%	16V
C1106	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1107	1-126-960-11	ELECT	1uF	20%	50V
C1108	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1114	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1115	1-126-935-11	ELECT	470uF	20%	10V
C1116	1-163-038-11	CERAMIC CHIP	0.1uF		25V
C1118	1-126-935-11	ELECT	470uF	20%	16V
C1119	1-126-933-11	ELECT	100uF	20%	16V
		< CONNECTOR >			
CN1001	1-784-792-11	CONNECTOR, FFC 31P			
CN1002	1-779-289-11	CONNECTOR, FFC (LIF (NON-ZIF)) 21P			
CN1003	1-779-295-11	CONNECTOR, FFC (LIF (NON-ZIF)) 27P			
CN1004	1-779-285-11	CONNECTOR, FFC (LIF (NON-ZIF)) 17P			
* CN1006	1-568-939-11	PIN, CONNECTOR 12P			
		< DIODE/SHORT >			
D1102	8-719-210-33	DIODE EC10DS2TE12L			
D1103	8-719-210-33	DIODE EC10DS2TE12L			
D1104	8-719-988-61	DIODE 1SS355TE-17			
D1106	8-719-988-61	DIODE 1SS355TE-17			
D1108	8-719-988-61	DIODE 1SS355TE-17			
D1109	1-216-296-00	SHORT	0		
		< IC >			
IC1001	8-759-828-80	IC M30805MG-205GP			
IC1004	8-759-822-09	IC LB1641			
IC1005	8-759-675-78	IC UDA1360TS			
IC1006	8-759-675-77	IC UDA1350AH			
IC1008	8-759-548-57	IC SN74LV00ANSR			
IC1101	8-759-699-44	IC uPDSS3033AYGF-M10-3BA			
		< COIL >			
L1001	1-412-533-21	INDUCTOR	47uH		
		< TRANSISTOR >			
Q1001	8-729-402-42	TRANSISTOR	UN5213-TX		
Q1002	8-729-602-36	TRANSISTOR	2SA1602TP-1EF		
Q1003	8-729-602-36	TRANSISTOR	2SA1602TP-1EF		
Q1004	8-729-403-35	TRANSISTOR	UN5113-TX		
Q1101	8-729-015-76	TRANSISTOR	UN5211-TX		
Q1102	8-729-010-08	TRANSISTOR	MSB710-RT1		
Q1103	8-729-602-21	TRANSISTOR	2SC4154TP-1EF		
		< RESISTOR/FERRITE BEAD >			
R1001	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R1002	1-216-066-00	METAL CHIP	5.1K	5%	1/10W
R1005	1-216-025-11	RES-CHIP	100	5%	1/10W
R1006	1-216-025-11	RES-CHIP	100	5%	1/10W
R1007	1-216-025-11	RES-CHIP	100	5%	1/10W
R1010	1-216-025-11	RES-CHIP	100	5%	1/10W
R1011	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1012	1-216-073-00	METAL CHIP	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R1013	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1014	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1015	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1016	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1017	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1018	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1021	1-216-025-11	RES-CHIP	100	5%	1/10W
R1024	1-216-025-11	RES-CHIP	100	5%	1/10W
R1029	1-216-049-11	RES-CHIP	1K	5%	1/10W
R1030	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R1033	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R1034	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R1035	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1036	1-216-295-11	SHORT	0		
R1057	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R1058	1-414-235-22	FERRITE	0uH		
R1059	1-414-235-22	FERRITE	0uH		
R1060	1-414-235-22	FERRITE	0uH		
R1071	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1072	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1073	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1076	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1078	1-216-025-11	RES-CHIP	100	5%	1/10W
R1080	1-216-025-11	RES-CHIP	100	5%	1/10W
R1082	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1085	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1087	1-216-065-00	RES-CHIP	4.7K	5%	1/10W
R1088	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R1090	1-216-041-00	METAL CHIP	470	5%	1/10W
R1091	1-216-033-00	METAL CHIP	220	5%	1/10W
R1092	1-216-033-00	METAL CHIP	220	5%	1/10W
R1093	1-216-033-00	METAL CHIP	220	5%	1/10W
R1094	1-216-033-00	METAL CHIP	220	5%	1/10W
R1095	1-216-039-00	METAL CHIP	390	5%	1/10W
R1103	1-216-089-11	RES-CHIP	47K	5%	1/10W
R1104	1-216-081-00	METAL CHIP	22K	5%	1/10W
R1105	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1106	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1107	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1108	1-216-089-11	RES-CHIP	47K	5%	1/10W
R1109	1-216-093-11	RES-CHIP	68K	5%	1/10W
R1110	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1111	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1112	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1113	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1114	1-216-033-00	METAL CHIP	220	5%	1/10W
R1119	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1120	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1121	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1122	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1123	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1125	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1129	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1130	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1138	1-216-073-00	METAL CHIP	10K	5%	1/10W
R1139	1-216-296-00	SHORT	0		
R2002	1-216-296-00	SHORT	0		

Ref. No.	Part No.	Description			Remark
		< VIBRATOR >			
X1001	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			
X1101	1-781-107-21	VIBRATOR, CERAMIC (16MHz)			
**********					
		MOTOR BOARD			
		**********			
		< CAPACITOR >			
C721	1-162-306-11	CERAMIC	0.01uF	30%	16V
**********					
		PANEL BOARD			
		**********			
C701	1-104-664-11	ELECT	47uF	20%	10V
C702	1-113-342-11	CERAMIC	0.1uF		50V
C703	1-162-290-31	CERAMIC	470PF	10%	50V
C704	1-162-282-31	CERAMIC	100PF	10%	50V
C705	1-162-282-31	CERAMIC	100PF	10%	50V
C706	1-126-785-11	ELECT	47uF	20%	10V
C707	1-162-294-31	CERAMIC	0.001uF	10%	50V
C708	1-162-306-11	CERAMIC	0.01uF	30%	16V
C709	1-162-306-11	CERAMIC	0.01uF	30%	16V
C710	1-162-306-11	CERAMIC	0.01uF	30%	16V
C711	1-162-282-31	CERAMIC	100PF	10%	50V
C712	1-162-282-31	CERAMIC	100PF	10%	50V
C713	1-162-306-11	CERAMIC	0.01uF	30%	16V
C714	1-162-306-11	CERAMIC	0.01uF	30%	16V
C715	1-162-306-11	CERAMIC	0.01uF	30%	16V
C725	1-162-306-11	CERAMIC	0.01uF	30%	16V
C727	1-162-306-11	CERAMIC	0.01uF	30%	16V
C731	1-126-785-11	ELECT	47uF	20%	10V
C732	1-126-785-11	ELECT	47uF	20%	10V
		< CONNECTOR >			
CN701	1-784-745-11	CONNECTOR, FFC 23P			
CN702	1-580-471-11	SOCKET, CONNECTOR 6P			
* CN703	1-568-946-11	PIN, CONNECTOR 8P			
		< DIODE >			
D705	8-719-058-04	LED SEL5223S-TP15 (I/⏻)			
D706	8-719-056-13	LED SML79423C-TP15 (CD► ❚❚)			
D707	8-719-056-13	LED SML79423C-TP15 (MD► ❚❚)			
D708	8-719-058-03	LED SEL5423E-TP15 (MD⏏)			
D709	8-719-056-13	LED SML79423C-TP15 (CD1)			
D710	8-719-056-13	LED SML79423C-TP15 (CD2)			
D711	8-719-056-13	LED SML79423C-TP15 (CD3)			
D712	8-719-058-04	LED SEL5223S-TP15 (REC/REC IT)			
D713	8-719-058-04	LED SEL5223S-TP15 (CD SYNC HIGH SPEED)			
D714	8-719-200-82	DIODE 11ES2-TA2B			
D771	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
D772	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
D773	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
D774	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
D775	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
D776	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
D781	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			

Ref. No.	Part No.	Description			Remark
D782	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
D783	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
D784	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
D785	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
D786	8-719-080-67	LED SELU6714C-TP6 (LCD BACK LIGHT)			
		< IC >			
IC701	8-759-459-85	IC NJL63H400A			
IC702	8-759-587-81	IC NJU3716M-TE2			
		< COIL >			
L701	1-410-509-11	INDUCTOR	10uH		
		< TRANSISTOR >			
Q701	8-729-900-80	TRANSISTOR	UN4211-TA		
Q702	8-729-119-76	TRANSISTOR	2SA1115TP-EF		
Q703	8-729-111-29	TRANSISTOR	2SD1616A-TP-LK		
Q704	8-729-900-80	TRANSISTOR	UN4211-TA		
		< RESISTOR >			
R701	1-247-807-31	CARBON	100	5%	1/4W
R702	1-247-807-31	CARBON	100	5%	1/4W
R703	1-247-807-31	CARBON	100	5%	1/4W
R704	1-247-807-31	CARBON	100	5%	1/4W
R705	1-247-807-31	CARBON	100	5%	1/4W
R706	1-247-807-31	CARBON	100	5%	1/4W
R707	1-249-417-11	CARBON	1K	5%	1/4W
R708	1-249-429-11	CARBON	10K	5%	1/4W
R709	1-247-807-31	CARBON	100	5%	1/4W
R710	1-247-807-31	CARBON	100	5%	1/4W
R711	1-247-807-31	CARBON	100	5%	1/4W
R712	1-249-417-11	CARBON	1K	5%	1/4W
R713	1-249-431-11	CARBON	15K	5%	1/4W
R717	1-249-417-11	CARBON	1K	5%	1/4W
R718	1-247-807-31	CARBON	100	5%	1/4W
R719	1-249-441-11	CARBON	100K	5%	1/4W
R720	1-249-413-11	CARBON	470	5%	1/4W
R721	1-249-413-11	CARBON	470	5%	1/4W
R722	1-249-409-11	CARBON	220	5%	1/4W
R723	1-249-415-11	CARBON	680	5%	1/4W
R724	1-249-415-11	CARBON	680	5%	1/4W
R725	1-249-407-11	CARBON	150	5%	1/4W
R726	1-249-409-11	CARBON	220	5%	1/4W
R727	1-249-417-11	CARBON	1K	5%	1/4W
R728	1-249-417-11	CARBON	1K	5%	1/4W
R729	1-249-407-11	CARBON	150	5%	1/4W
R730	1-249-413-11	CARBON	470	5%	1/4W
R731	1-249-419-11	CARBON	1.5K	5%	1/4W
R732	1-249-419-11	CARBON	1.5K	5%	1/4W
R733	1-249-419-11	CARBON	1.5K	5%	1/4W
R734	1-249-407-11	CARBON	150	5%	1/4W
R735	1-249-411-11	CARBON	330	5%	1/4W
R736	1-249-421-11	CARBON	2.2K	5%	1/4W
R737	1-249-409-11	CARBON	220	5%	1/4W
R738	1-247-843-11	CARBON	3.3K	5%	1/4W
R739	1-249-411-11	CARBON	330	5%	1/4W
R740	1-249-425-11	CARBON	4.7K	5%	1/4W
R741	1-249-409-11	CARBON	220	5%	1/4W
R742	1-249-427-11	CARBON	6.8K	5%	1/4W
R743	1-249-411-11	CARBON	330	5%	1/4W
R744	1-249-429-11	CARBON	10K	5%	1/4W
R745	1-249-409-11	CARBON	220	5%	1/4W
R746	1-249-431-11	CARBON	15K	5%	1/4W
R747	1-249-411-11	CARBON	330	5%	1/4W
R748	1-249-411-11	CARBON	330	5%	1/4W
R749	1-249-433-11	CARBON	22K	5%	1/4W
R750	1-249-435-11	CARBON	33K	5%	1/4W
R751	1-249-439-11	CARBON	68K	5%	1/4W
R754	1-249-411-11	CARBON	330	5%	1/4W
R757	1-249-411-11	CARBON	330	5%	1/4W
R764	1-249-393-11	CARBON	10	5%	1/4W
R765	1-249-417-11	CARBON	1K	5%	1/4W
R766	1-249-429-11	CARBON	10K	5%	1/4W
R767	1-247-807-31	CARBON	100	5%	1/4W
R769	1-249-403-11	CARBON	68	5%	1/4W
R770	1-249-387-11	CARBON	3.3	5%	1/4W
R771	1-249-391-11	CARBON	6.8	5%	1/4W
R772	1-249-391-11	CARBON	6.8	5%	1/4W
R773	1-249-391-11	CARBON	6.8	5%	1/4W
R774	1-249-391-11	CARBON	6.8	5%	1/4W
R775	1-249-391-11	CARBON	6.8	5%	1/4W
R776	1-249-391-11	CARBON	6.8	5%	1/4W
		< SWITCH >			
S701	1-476-349-11	ENCODER, ROTARY (VOLUME)			
S702	1-762-875-21	SWITCH, KEYBOARD (I/⏻)			
S703	1-762-875-21	SWITCH, KEYBOARD (CD►❚❚)			
S704	1-762-875-21	SWITCH, KEYBOARD (FUNCTION)			
S705	1-762-875-21	SWITCH, KEYBOARD (MD►❚❚)			
S706	1-762-875-21	SWITCH, KEYBOARD (MD⏏)			
S707	1-762-875-21	SWITCH, KEYBOARD (TUNER/BAND)			
S708	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE/TUNING MODE)			
S709	1-762-875-21	SWITCH, KEYBOARD (■)			
S710	1-762-875-21	SWITCH, KEYBOARD (SYNC MODE)			
S712	1-762-875-21	SWITCH, KEYBOARD (CD SYNC HIGH SPEED)			
S713	1-762-875-21	SWITCH, KEYBOARD (CD SYNC NORM SPEED)			
S714	1-762-875-21	SWITCH, KEYBOARD (REC/REC IT)			
S715	1-762-875-21	SWITCH, KEYBOARD (REC MODE)			
S716	1-762-875-21	SWITCH, KEYBOARD (REPEAT STEREO/MONO)			
S717	1-762-875-21	SWITCH, KEYBOARD (⏏ (CD3))			
S718	1-762-875-21	SWITCH, KEYBOARD (CD3)			
S719	1-762-875-21	SWITCH, KEYBOARD (⏏ (CD2))			
S720	1-762-875-21	SWITCH, KEYBOARD (CD2)			
S721	1-762-875-21	SWITCH, KEYBOARD (⏏ (CD1))			
S722	1-762-875-21	SWITCH, KEYBOARD (CD1)			

****

POWER BOARD
****

	1-533-293-11	FUSE HOLDER (JE)

POWER REG

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C901	1-126-916-11	ELECT	1000uF	20%	6.3V
C902	1-126-965-11	ELECT	22uF	20%	35V
C904	1-113-342-11	CERAMIC	0.1uF		50V
C905	1-126-937-11	ELECT	4700uF	20%	16V
C908	1-136-165-00	MYLAR	0.1uF	5%	50V
⚠C911	1-113-925-11	CERAMIC	0.01uF	20%	250V
C925	1-104-665-11	ELECT	100uF	20%	10V
		< CONNECTOR >			
* CN901	1-564-519-11	PLUG, CONNECTOR 4P			
* CN903	1-580-230-31	PIN, CONNECTOR (PC BOARD) 2P			
CN905	1-564-321-00	PIN, CONNECTOR 2P			
		< DIODE >			
D932	8-719-200-82	DIODE 11ES2-TA2B			
D940	8-719-911-19	DIODE 1SS133T-72			
D941	8-719-911-19	DIODE 1SS133T-72			
D942	8-719-200-82	DIODE 11ES2-TA2B			
D943	8-719-200-82	DIODE 11ES2-TA2B			
D944	8-719-200-82	DIODE 11ES2-TA2B			
D945	8-719-200-82	DIODE 11ES2-TA2B			
D951	8-719-911-19	DIODE 1SS133T-72			
		< FUSE >			
⚠F903	1-532-502-31	FUSE (T1.25AL/250V) (JE)			
		< IC >			
IC901	8-759-450-47	IC BA05T			
		< TRANSISTOR >			
Q901	8-729-620-05	TRANSISTOR	2SC2603TP-EF		
		< RESISTOR >			
R901	1-247-843-11	CARBON	3.3K	5%	1/4W
R902	1-249-413-11	CARBON	470	5%	1/4W
⚠R903	1-219-121-11	FUSIBLE	0.22	5%	1/4W F
R906	1-249-413-11	CARBON	470	5%	1/4W
R907	1-249-417-11	CARBON	1K	5%	1/4W
R908	1-249-429-11	CARBON	10K	5%	1/4W
		< RELAY >			
⚠RY961	1-755-276-11	RELAY, POWER			
		< TRANSFORMER >			
⚠T901	1-435-937-11	TRANSFORMER, POWER (HK, KR)			
⚠T901	1-435-938-11	TRANSFORMER, POWER (JE)			
⚠T902	1-435-939-11	TRANSFORMER, POWER (HK, KR)			
⚠T902	1-435-940-11	TRANSFORMER, POWER (JE)			
⚠T906	1-424-485-11	FILTER, LINE			

****

REG BOARD
****

1-533-293-11 FUSE HOLDER

Ref. No.	Part No.	Description			Remark
		< CAPACITOR >			
C800	1-126-960-11	ELECT	1uF	20%	50V
C801	1-126-960-11	ELECT	1uF	20%	50V
C903	1-126-943-11	ELECT	2200uF	20%	25V
C906	1-126-943-11	ELECT	2200uF	20%	25V
C907	1-115-364-11	ELECT	22000uF	20%	16V
C909	1-130-495-00	MYLAR	0.1uF	5%	50V
C910	1-130-495-00	MYLAR	0.1uF	5%	50V
C914	1-130-495-00	MYLAR	0.1uF	5%	50V
C915	1-104-665-11	ELECT	100uF	20%	10V
C916	1-104-665-11	ELECT	100uF	20%	10V
C919	1-104-665-11	ELECT	100uF	20%	10V
C920	1-113-342-11	CERAMIC	0.1uF		50V
C921	1-130-495-00	MYLAR	0.1uF	5%	50V
C923	1-104-665-11	ELECT	100uF	20%	10V
C924	1-130-495-00	MYLAR	0.1uF	5%	50V
C926	1-126-935-11	ELECT	470uF	20%	10V
C927	1-130-495-00	MYLAR	0.1uF	5%	50V
C928	1-104-665-11	ELECT	100uF	20%	10V
C929	1-104-665-11	ELECT	100uF	20%	10V
C930	1-130-495-00	MYLAR	0.1uF	5%	50V
C931	1-104-665-11	ELECT	100uF	20%	10V
		< CONNECTOR >			
* CN805	1-770-729-11	CONNECTOR, BOARD TO BOARD 10P			
* CN904	1-564-519-11	PLUG, CONNECTOR 4P			
* CN907	1-564-523-11	PLUG, CONNECTOR 8P			
CN908	1-564-521-11	PLUG, CONNECTOR 6P			
		< DIODE >			
D800	8-719-110-06	DIODE RD8.2ES-T2B1			
D830	8-719-083-06	DIODE MTZJ-T-72-10A			
D946	8-719-200-82	DIODE 11ES2-TA2B			
D947	8-719-200-82	DIODE 11ES2-TA2B			
D948	8-719-210-21	DIODE 11EQS04-TA2B			
D949	8-719-210-21	DIODE 11EQS04-TA2B			
D956	8-719-200-82	DIODE 11ES2-TA2B			
D958	8-719-200-82	DIODE 11ES2-TA2B			
D959	8-719-200-82	DIODE 11ES2-TA2B			
D960	8-719-200-82	DIODE 11ES2-TA2B			
D961	8-719-200-82	DIODE 11ES2-TA2B			
D963	8-719-200-82	DIODE 11ES2-TA2B			
D964	8-719-200-82	DIODE 11ES2-TA2B			
D965	8-719-200-82	DIODE 11ES2-TA2B			
D971	8-719-028-23	DIODE D3SBA20-4101			
		< FUSE >			
⚠F803	1-532-504-31	FUSE (T4AL/250V)			
		< IC >			
IC911	8-759-605-00	IC M5F78M07L			
IC912	8-759-394-35	IC BA12T			
IC916	8-759-158-62	IC TA78057S			
IC917	8-759-701-75	IC NJM7805FA			
IC919	8-759-445-59	IC BA033T			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

Ref. No.	Part No.	Description				Remark
		< TRANSISTOR >				
Q800	8-729-209-15	TRANSISTOR	2SD2012			
Q801	8-729-209-15	TRANSISTOR	2SD2012			
		< RESISTOR >				
R830	1-249-411-11	CARBON	330	5%	1/4W	
R831	1-249-409-11	CARBON	220	5%	1/4W	
⚠R904	1-243-635-11	FUSIBLE	0.33	5%	1/2W	F
⚠R910	1-243-635-11	FUSIBLE	0.33	5%	1/2W	F
		< THERMISTOR (POSITIVE) >				
THP501	1-803-350-21	THERMISTOR, POSITIVE				
THP503	1-803-350-21	THERMISTOR, POSITIVE				
**********						
		RELAY BOARD				
		**********				
		< CONNECTOR >				
CN791	1-784-833-21	CONNECTOR, FFC (LIF (NON-ZIF)) 21P				
CN792	1-784-833-21	CONNECTOR, FFC (LIF (NON-ZIF)) 21P				
**********						
		SELECTOR BOARD (JE)				
		**********				
		< CONNECTOR >				
* CN993	1-580-445-11	PIN, CONNECTOR 3P				
* CN994	1-580-445-11	PIN, CONNECTOR 3P				
		< SWITCH >				
⚠S991	1-554-752-11	SELECTOR, POWER VOLTAGE (VOLTAGE SELECTOR)				
**********						
		TRAY SENSOR BOARD				
		**********				
		< CAPACITOR >				
C731	1-164-159-11	CERAMIC	0.1uF		50V	
		< PHOTO SENSOR >				
IC731	8-749-081-01	PHOTO SENSOR	DG-264			
IC732	8-749-081-01	PHOTO SENSOR	DG-264			
IC733	8-749-081-01	PHOTO SENSOR	DG-264			
		< RESISTOR >				
R731	1-247-876-11	CARBON	75K	5%	1/4W	
R732	1-249-408-11	CARBON	180	5%	1/4W	
R733	1-247-876-11	CARBON	75K	5%	1/4W	
R734	1-249-408-11	CARBON	180	5%	1/4W	
R735	1-247-876-11	CARBON	75K	5%	1/4W	
R736	1-249-408-11	CARBON	180	5%	1/4W	
**********						
		MISCELLANEOUS				
		**********				
4	1-773-002-11	WIRE (FLAT TYPE) (15 CORE)				
6	1-693-472-21	TUNER (JE)				
6	1-693-473-41	TUNER (HK, KR)				
65	1-757-087-11	WIRE (FLAT TYPE) (23 CORE)				
104	1-757-548-11	WIRE (FLAT TYPE) (31 CORE)				
105	1-757-086-11	WIRE (FLAT TYPE) (21 CORE)				
106	1-757-084-11	WIRE (FLAT TYPE) (27 CORE)				
107	1-757-085-11	WIRE (FLAT TYPE) (17 CORE)				
⚠110	1-575-651-21	CORD, POWER (HK, JE)				
⚠110	1-769-079-11	CORD, POWER (KR)				
357	1-678-514-11	FLEXIBLE BOARD				
⚠358	A-4672-976-A	OPTICAL PICK-UP KMS-262A/J1N				
⚠574	A-4677-295-A	BASE UNIT (BU-21BD53)				
577	1-757-124-11	WIRE (FLAT TYPE) (21 CORE)				
HR901	1-500-670-12	HEAD, OVER LIGHT				
LCD600	1-804-158-11	DISPLAY PANEL, LIQUID CRYSTAL				
M101	A-4735-029-A	MOTOR ASSY, SPINDLE (for MD)				
M102	A-4672-900-A	MOTOR ASSY, SLED (for MD)				
M103	A-4672-975-A	MOTOR ASSY, LOADING (for MD)				
M721	1-541-632-11	MOTOR, DC (LOADING) (for CD)				
M801	1-763-632-11	FAN, DC				
S102	1-771-957-11	SWITCH, PUSH (2 KEY) (REFLECT RATE DETECT, PROTECT DETECT)				
⚠T901	1-435-937-11	TRANSFORMER, POWER (HK, KR)				
⚠T901	1-435-938-11	TRANSFORMER, POWER (JE)				
**********						
		**********				
		HARDWARE LIST				
		**********				
#1	7-685-204-19	SCREW +KTP 2X6 TYPE2 NON-SLIT				
#2	7-685-645-79	SCREW +BVTP 3X6 TYPE2 N-S				
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 TT (B)				
#4	7-685-647-79	SCREW +BVTP 3X10 TYPE2 IT-3				
#6	7-685-871-01	SCREW +BVTT 3X6 (S)				
#7	7-685-651-79	SCREW +BVTT 3X20				
**********						
		ACCESSORIES & PACKING MATERIALS				
		**********				
	1-569-008-21	ADAPTOR, CONVERSION 2P (JE)				
	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK)				

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	以阴影和 ⚠ 标志来识别的零部件，在安全方面具有关键性，因此只能以规定号码的零部件来更换。

REVISION HISTORY

Clicking the version allows you to jump to the revised page.
Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

Ver.	Date	Description of Revision
1.0	2000.12	New
1.1	2001.07	Addition of Ref. No. 67 SPRING HOOK (MD) to EXPLODED VIEWS (SPM-01029)
1.2	2002.11	Addition of Ref. No. 518, 519, 520, 521 to EXPLODED VIEWS (SPM-02098)